ONTARIO METAL MINING STATISTICS

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ONTARIO METAL MINING

A STATISTICAL COMPENDIUM

PREFACE

Origin and Purpose

This volume is a combination and extension of the work published in October 1979 by the Ontario Ministry of Natural Resources under the title 'Ontario Mining Statistics: A Preliminary Compendium' (Mineral Policy Background Paper No. 11). The origin and purpose of the original study as set out in its Preface is as follows:

"Over the past several years the staff at the Mineral Resources Branch of the Ontario Ministry of Natural Resources has been active in preparing a number of background papers on mineral policy. In the course of this work, the staff found that their research was complicated by the unorganized character of mining industry data. As a result, the Centre for Resource Studies was commissioned by the Ministry of Natural Resources in May 1978 to begin organizing and analyzing available data series on the Ontario mining industry.

The project was conceived as a two-phase undertaking. The first phase was to focus on the study of time series data for a limited number of economic variables, and to prepare a catalogue of provincial and federal legislation pertaining to the industry in the province during the post-1945 period. The second stage is intended to cast the net more broadly: to organize other series from documentary sources not covered by the first stage, and to construct new series, to the extent possible, from primary sources.

The purpose of this volume is, in the first instance, to provide a data base to facilitate research on mineral policy at the Mineral Resources Branch. In addition, it is intended to have wider use as a research tool in industry and in universities, and to be accessible to the public at large."

In line with this general purpose the goals of the second stage were (a) to extend the original series back in time as far as possible and to bring them forward to the present and (b) to add new series. The main thrust of this new work has been to link input and output data systematically with particular emphasis on the period 1945 to 1979. These input/output series have, in the main, been drawn from unpublished series derived from the Annual Reports of the Census of Mines for the Province of Ontario. The unpublished data were made available in basic form by Information Systems Division, Mineral Policy Sector, Energy Mines and Resources, Ottawa. The input/output series were compiled in such a way as to conform with the confidentiality provisions of the Canada Statistics Act. Following these guidelines, data were collected on four separate mining groups - total metal mines, gold, iron and other metal mining industries.

Although the linking of input/output series has been a prime concern in this volume, other series have been developed as well. These include: data for capital and repair expenditures; taxes paid; and a sector which covers aspects of industrial relations, i.e. strikes and lockouts, employee fringe benefits etc. As part of this work on labour costs, a sample survey of Ontario metal mines was undertaken to assess, at a micro level, the growth and distribution of a number of direct and indirect labour costs. Finally a set of economic indicators has been drawn together to aid in the interpretation of the mining statistics.

The Data

The data are grouped under six headings:

i output statistics;
ii input statistics - principal and energy;
iii indicators of exploration activity;
iv provincial mining revenue;
v industrial relations statistics;
vi economic indicators.

The data series contain two features. First, long-term data series on provincial metal mining for Ontario are shown. Second, an attempt is made to match input and output series for specific industries. For each series, in addition to data for specific industries, total metal mining series are given by category.

Note

Part II of the original volume entitled 'A Chronicle of Provincial and Federal Legislation Since 1945 Pertaining to the Ontario Mining Industry' is not reproduced in this volume.

Format and Interpretation of the Statistics

The statistical part is organized under six headings, each prefaced by a documentation of sources and a commentary on features of the data. In the sections on production, a note on methods and other features of the data precedes the tables for each mineral.

Another feature of the tables deserves particular comment. There are instances where a data cell contains either a zero or a 'dash'. A zero signifies no production. A 'dash' may have different meanings, however. It may indicate either that the figure is not available or, in the case of the production series, that the series has been truncated. The meaning for any given instance should be clear from the context or the accompanying notes.

Bibliographic references are identified at the beginning of the notes for each of the six principal groups of data. In preparing many of the series, several annual publications of the same report or periodical were used. Since in such cases the linking of each observation to its precise source would have been unwieldy and unnecessary, only the general bibliographic details used for a series are cited. In the production section, when the identical sources were used for the data for any given year for several minerals, the bibliographic references are contained in the notes covering the major data group.

Organization and Procedures

The original study was carried out under the joint direction of the Project Manager, Dr. G. Anders of the Mineral Resources Branch of the Ontario Ministry of Natural Resources and the Project Director, Dr. C.G. Miller of the Centre for Resource Studies. Primary responsibility for conducting the basic research and preparation of the compendium rested with Dr. C.H. Pye of the Centre for Resource Studies. Mr. M.N.A. Hinton, along with Mr. Pye, undertook basic documentary research on the data series. Miss C.E. McMurray prepared the tables for the legislative log. Professor M.C. Urquhart of Queen's University was the Consulting Editor. An Advisory Committee included Mr. G.T. Ballantyne, Falconbridge Nickel Mines Limited; Dr. W.R. Scott, Queen's University; and Mr. I.A. Hodson, Queen's University.

The present study, as in the case of the original, was carried on under the joint direction of Dr. G. Anders and Dr. C.G. Miller. With the departure of Dr. Miller from the Centre, direction was undertaken by Dr. Brian Mackenzie who assumed the position of Interim Executive Director. Dr. Anders' contribution has been vital to the completion of the study. He not only gave encouragement, but he also provided useful insights into the interpretation of various data series. We are also indebted to his staff, and particularly Gary Weatherson, who so patiently answered our questions. Charles Pye began work on this second phase of the project and completed a number of the series which appear in this volume before leaving the Centre for a position with the Nova Scotia Department of Economic Development. Dr. Alan Green, Professor of Economics of Queen's University took over from Mr. Pye as Project Director, early in the second phase.

The work of collecting, organizing and checking data series is a time-consuming effort which requires many hours of detailed work. Primary responsibility for ensuring the completeness and accuracy of these data series was undertaken by Mrs. Ann Green. Mrs. Green was responsible, among other things, for the assembly of many of the series reproduced in this volume.

Work of this nature involves the cooperation of many people. In particular we would also like to thank Mr. John Brennan, Acting Director, Information Systems Division, Mineral Policy Sector, Energy, Mines and Resources for his willingness to make available the basic data. Art Symons, formerly of Statistics Canada, not only prepared some of the series which appear in this volume but also helped at critical points to define and explain the meaning of the data collected by the various agencies.

Finally, we wish to thank Marianne Leather who has patiently typed the manuscript and tables and Margot Wojciechowski for her editorial assistance.

Alan G. Green
Project Director

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Cobalt 13
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Platinum Group Metals –
Rhodium (See Platinum Group Metals) 39
Ruthenium (See Platinum Group Metals) –
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Thorium 49
Tin 50
Tungsten 51
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ORE HOISTED - METALS

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Tonnes 60

PRINCIPAL INPUTS (1961-1977)

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Gold - Mining Activity 66
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Iron - Mining Activity 69
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CLASSIFICATION OF METALLIC MINERALS PRODUCED IN ONTARIO

PRECIOUS METALS

Gold
Silver
Platinum Group Metals
  Iridium
  Palladium
  Platinum
  Rhodium
  Ruthenium

BASE METALS

Antimony
Beryllium
Bismuth
Cadmium
Calcium
Cerium
Chromite
Cobalt
Copper
Lead
Magnesium
Molybdenum
Nickel
Selenium
Tellurium
Tin
Tungsten
Zinc

URANIUM GROUP METALS

Uranium
Thorium
Yttrium

IRON ORE

GENERAL NOTES ON PRODUCTION STATISTICS

THE DATA SERIES

Twenty-nine different metallic minerals have been produced in the province of Ontario, at one time or another during the twentieth century. This section records the annual volume and value of production for each of these minerals.

SOURCES

The primary data sources for the data series on volume and value of production were from three areas:

i the Statistical Files of the Information and Statistics Section (formerly Mineral Economics Section), Mineral Resources Branch, Division of Mines, Ontario Ministry of Natural Resources;
ii publications of the Ontario Ministry of Natural Resources;
iii Statistics Canada publications.

The Statistical Files contain a handwritten record of annual mining data. This information is obtained from the Ontario mining industry through the 'Annual Census of Mines, Quarries and Sand Pits' and the 'Report of Mineral Industry Operations, Company Officials, Incorporation, and Capitalization.' The Annual Census has been a joint responsibility of the Ministry and Statistics Canada since 1921. The Ministry[1] also conducted an independent census covering the period 1891 to 1920. The Report has continued to be an independent responsibility of the Ministry.

Statistical material, based on the data in the Statistical Files, is published on a regular basis by the Ministry. Annual Reports have been issued since the creation of the Bureau of Mines in 1891. In 1968 a series of Annual Statistical Reports was instituted.

Comprehensive annual data on the Ontario mineral industry have been produced by federal government agencies since 1886. Annual Reports were issued by the Geological Survey of Canada for the period 1886 to 1905. The Mines Branch of the federal Department of Mines undertook the responsibilities of publication for the years 1906 to 1920. Since then, Statistics Canada has been responsible for the publication of mineral industry statistics. Prior to 1949, most published mineral industry data appeared under the title Annual Report on the Mineral Production of Canada. The direct descendant of these Annual Reports is the General Review of the Mineral Industries (26-201) and companion publications in Statistics Canada's catalogue number 26-200 series.

VERIFICATION PROCEDURES

The Statistical Files provided, as far as possible, the foundation data for each of the metallic mineral production series. These data were checked against the published government sources. In the case of Ontario, the two sources are the Annual Reports and the Annual Statistical Reports published by the Ministry of Natural Resources. From among the sources published by federal government agencies, four were used primarily:

i Dominion Bureau of Statistics, Annual Report on the Mineral Production of Canada, 1938 (Ottawa, 1940);
ii Dominion Bureau of Statistics, Canadian Mineral Statistics, 1886-1956; Mining Events, 1604-1956, Reference Paper No. 58 (Ottawa, 1957);
iii Statistics Canada, General Review of the Mineral Industries: Mines, Quarries and Oil Wells, 1975 (26-201);
iv Energy, Mines and Resources, Mineral Production of Canada, by Province, 1931-1975, by A.E. Spoerri (March 1976).

Together, these sources provide continuous, though not necessarily internally consistent, series for the several metallic minerals from the 1880s to the 1970s. For individual minerals,

1. In 1891 the Bureau of Mines was born out of the Department of Crown Lands. Since then, the Ministry responsible for overseeing the provincial mining industry has gone under the following titles: Department of Lands, Forests and Mines; Department of Mines; Department of Mines and Northern Affairs; and Ministry of Natural Resources. The designation Ministry of Natural Resources (MNR) is used to cover historically all the ministries responsible for collecting mining industry data. Similarly, the designation Statistics Canada (SC) also encompasses the data-collecting activities of the Dominion Bureau of Statistics and the Geological Survey of Canada. In 1979, the responsibility for collecting and publishing mineral production data was transferred from Statistics Canada to the Department of Energy, Mines and Resources.

inconsistencies between the Statistical Files and the published data sources are identified in the notes pertaining to the individual mineral production series. These introductory notes also describe in a general manner the methods used by the Ontario and federal data-gathering agencies. Attention is drawn to the early evolution of data collection methods, and the adoption of common approaches in the 1920s by the Ontario Department of Mines and the Dominion Bureau of Statistics in organizing mineral-industry production data for the province of Ontario.

DEVELOPMENT OF DATA METHODOLOGIES

Problems of internal inconsistencies within and between data series for any given mineral derive from changes in the extent of industry coverage and in methods of estimating and valuing mineral production. This was especially characteristic of the period before 1925. However, from the inception of systematic mineral-industry data collection in the late nineteenth century, the Ontario and federal mineral-statistics agencies sought to develop reliable and accurate data. These efforts culminated in two significant developments in the 1920s. The first was the acceptance in 1921 of a common questionnaire. The second was the reaching of agreement in 1925 on methods to be used in valuing metallic mineral production.

A Common Questionnaire

The adoption in 1921 of a common questionnaire marked the conclusion of a long period in which the federal and Ontario agencies pursued virtually independent data-collection activities. This period featured the continuing efforts of both agencies to improve coverage of the population of mining operators within their respective jurisdictions.

The first methodical survey of mineral production for Canada was undertaken for the year 1886 by the Geological Survey of Canada. The statistical report for that year was based on 665 schedules, of some 2,000 mailed out, and 185 replies to 400 letters, together with supplementary information provided by the Department of Mines of British Columbia and the Chief Inspector of Mines in Nova Scotia (Sessional Papers of Canada, vol. 12, no. 12 (1888), S.P. no. 14, part III, pp. 27-28). The mailing list of mining operators was continually revised and improved. In 1890, 5,500 circulars and reminders, and 650 letters were sent to mine operators (Sessional Papers of Canada, vol. 24, no. 14 (1891), S.P. no. 17A, pp. 42-44). In 1917, the mailing list consisted of some 3,500 smelter, mine and quarry operators (Summary Report of the Mines Branch, 1917, p. 138).

In addition to circularizing mine operators, the Geological Survey mounted a program of field work in 1886. This involved staff visits to mining sites to gain first-hand knowledge of mining operations throughout the country.

The field visits were considered to be indispensable to the compilation of complete and intelligible records of mineral production in the country. They were '. . . necessary to enable the compiler of statistics to properly understand and coordinate them. The majority of mining operators are willing to furnish very complete information concerning their operations to a personal applicant, while few will take much trouble to answer correspondence' (Summary Report of the Mines Branch, 1908, p. 32).

The canvassing of mine operators was not the only (although vital) source of data on mineral production. A concise statement of early procedures used in collecting and verifying mineral statistics is contained in the first Annual Report on the Mineral Production of Canada (1906) published by the Department of Mines: 'The figures . . . are based as far as possible upon the returns obtained direct from the various operators, or from official data, and the totals are checked by comparison with railway shipments, exports, and all other sources of information' (Sessional Papers of Canada, vol. 42, no. 13 (1907-8), S.P. no. 26b, p. 6). Similar collection and validation procedures were carried on by the Dominion Bureau of Statistics, with an underlying purpose of ensuring continuity in mineral production data series (Annual Report o[n] the Mineral Production of Canada, 1921, p. 3).

Although acting independently of the Geological Survey of Canada (and the federal Department of Mines), Ontario adopted analogous procedures for collecting data on mineral production. The formal, systematic collection of production statistics for the province by an Ontario government data-gathering agency dates from 1891 with the establishment of the Bureau of Mines. At the outset, it was made clear that the collection of mineral statistics was to be an important activity of the Bureau (First Report of the Bureau of Mines, 1891, p. 5). Further, the Bureau was empowered by the Mines Act of 1892 to gather data on the quantity and value of mineral production (S.O., 55 Vict., c.9, s.60).

Initially there were problems in obtaining full industry coverage, especially in procuring a list of the companies engaged in quarrying and in production of structural materials. By contrast, the metal-mining companies were easily identified, since they were few in number and there was little problem in getting returns from them (First Report of the Bureau of Mines, 1891, p. 5). However, in the Second Report of the Bureau of Mines, 1892, the general comment is

made that '. . . the returns received have not been altogether satisfactory but doubtless they will improve when the requirements of the Act are better understood and the value of statistics come to be better appreciated by mining men' (p. 7). By the end of the decade, a quantum improvement in data collection had been realized. The Tenth Report of the Bureau of Mines (1900) states that '. . . on the whole, the miners and producers of minerals make prompt and satisfactory returns of their output' (p. 13).

Two comments are pertinent. First, systematic data collection dates from 1886 at the earliest, and from 1891 in the records of the Ontario Bureau of Mines. Consequently, it is inappropriate to present data on mineral production extending back in time before these years. The validity of that data is doubtful. Second, satisfactory production data were realized only some years after formal data-collecting activities had been initiated. Although no quantification is possible from the documentary evidence, it does appear that the Ontario Bureau of Mines, which took pride in its diligence, had succeeded in obtaining by 1900 rather full and satisfactory returns, at least for metallic mineral production.

Although the federal and Ontario mineral statistics agencies pursued essentially independent data-collecting activities until 1921, there was an early mutual recognition that a common system would be advantageous (Summary Report of the Mines Branch, 1907-8, p. 65; Sixteenth Annual Report of the Bureau of Mines, 1907, p. 5). At least as far back as 1907, there was a modicum of cooperation in collecting mining industry statistics, and a process of consultation to coordinate the work. Eventually, conferences between the Dominion Bureau of Statistics and the Ontario Department of Mines '. . . resulted in a plan whereby the final data for the year 1921 were collected on joint forms, thus preventing the overlapping and duplication of work' (Annual Report on the Mineral Production of Canada, 1921, p. 5). The joint collection of data reduced the paperwork for the mine operator and enhanced the comparability of federal and provincial figures.

Valuation Methods

The second major development was the conclusion of an agreement in 1925 on the application of uniform methods for valuing metallic mineral production. Prior to this agreement, the methodologies were fundamentally different. The federal Department of Mines valued metallic mineral output (based on estimated smelter recovery), whether refined in Canada or not, on the basis of the average price of the metal in some recognized market, usually New York (Annual Report of the Division of Mineral Resources and and Statistics on the Mineral Production of Canada, 1909, pp. 7, 8). The Dominion Bureau of Statistics adopted the same valuation methodology.

A note on the methodology contained in the Annual Report on the Mineral Production of Canada, 1922 (p. 12) is worth reproducing here. This excerpt summarizes the method employed by the Dominion Bureau of Statistics in valuing metallic minerals, and also indicates its continuity with the practice of the Mines Branch of the federal Department of Mines and, before that, the Geological Survey of Canada.

> For statistical and comparative purposes, it has always been customary to determine the value of the metals, copper, gold, silver, lead, nickel, and zinc as far as possible on the basis of the quantities of metals recovered from Canadian ores smelted during the year, either in Canada or abroad, and to compute the value of this production in each case at the average price of the refined metal in a recognized market . . . The New York market was used in the case of the principal metals since most of the sales of Canadian products are made on that market.

Ontario used a quite different approach. From the establishment of the Bureau of Mines in 1891, the valuation of metallic mineral production was based on product selling values at the mine or smelter (Tenth Report of the Bureau of Mines, 1900, p. 13).

The case of nickel illustrates the difference in valuation method:

> The [federal agency] values the nickel contents of the mattes produced by the Sudbury furnaces at the average price of refined nickel in the ore, while the [provincial] figures represent the value of the nickel in the form of matte and at the point of production, as given by the producers (Eighteenth Report of the Ontario Bureau of Mines, 1909, p. 7).

Similar differences in approach were applied to other metals, especially copper. The result was that federal estimates of the value of production for nickel and copper in Ontario were consistently higher than the estimates of the Bureau of Mines. Although between 1910 and 1925 there was a decided convergence in the value of production series for each of these metallic minerals, differences persisted.

The considerable differences between the estimates of value of production, and the consequent potential for confusion, were long recognized by both the Ontario and federal agencies responsible for reporting mineral statistics. For several years, both statistics bureaux presented, in their annual reports, comparative estimates of the value of metallic mineral production using both methodologies. Finally, in 1925, the Ontario Department of Mines and the Dominion Bureau of Statistics convoked a conference on the methods of computing mineral statistics (Annual Report on the Mineral Production of Canada, 1926, pp. 374-376). From this date, the estimates of metallic mineral volume and value of production by the two agencies have generally been in harmony. Significant differences became the exception rather than the norm. Thus, in essence, consistent metallic mineral volume estimates and value of production estimates exist for the province of Ontario dating from 1925.

DATA SOURCES OF THE ONTARIO MINISTRY

Not only are there differences between the data in the Statistical Files of the Ministry and Statistics Canada publications, but there are also differences between mineral production data in the Statistical Files and in the Annual Reports published by the Ministry. The discrepancies between the files and published data, both for volume and for value of production, apply principally to copper, nickel, gold, silver, and iron ore. There does not appear to be any systematic pattern to the differences, which are largely confined to the years prior to 1945. Since then, the data generally agree for all metallic mineral series.

Why these sources within the Ministry should yield incompatible estimates is a puzzle. The conundrum is all the more baffling since the federal and Ontario agencies had substantially resolved their methodological differences in 1925. One possible answer is that the data published in the Annual Reports are revised figures, while the data in the Statistical Files are preliminary. If this were the whole reason, it is to be expected that the data published in the Ontario and Statistics Canada reports would coincide, but this does not always occur. The remaining inconsistencies have not yet been resolved. It has, therefore, not been possible to choose between these Ministry sources in terms of their comparative quality. However, the data series from the Statistical Files have been chosen for reproduction in this compendium, in the tables on the volume and value of production.

FORMAT AND INTERPRETATION OF DATA TABLES

Because it is often impossible to choose between the Statistical Files and Statistics Canada data in terms of quality, the production data from the two sources are given separately where they conflict. For any given mineral, the Statistical Files data series are given first and are labeled 'MNR Series'; the Statistics Canada data carry the label 'SC Series'. In all instances the full Statistical Files series is given, while frequently only a truncated Statistics Canada series is provided. Only that continuous portion of the Statistics Canada series containing differences from the Statistical Files data is presented. In each case, the remainder of the Statistics Canada series, not presented, is in agreement with the Statistical Files data. Where the sources for an entire series coincide, the table is labelled 'MNR and SC Series'.

In the mineral production tables, in order to provide unbroken series, the initial year for any mineral is generally that year from which there is a continuous record of production.

Each table contains three columns, exclusive of the date column. The first column gives volume of production in English measure; the second column the volume of production in SI (metric) units. The third column is the value of production in dollars. The metric conversion factors, taken from The Mining Association of Canada, Metric Practice Guide for the Canadian Mining and Metallurgical Industries (February 1978), are as follows:

i troy ounces x 31.1034768 = grams
ii pounds x 0.45359237 = kilograms
iii short tons x 0.90718474 = tonnes (metric tons).

These conversion factors are used by the Ontario Mineral Resources Branch, by Statistics Canada, and by the Department of Energy, Mines and Resources.

Although newspapers and trade publications generally give base metal figures in tonnes, kilograms rather than tonnes have been used here to facilitate direct comparison with the data published by Statistics Canada. The production data in the tables can, of course, be readily converted from kilograms to tonnes by inspection, with the application of the appropriate scalar (1/1000).

In order to facilitate understanding the data within any series, and for making comparisons between series for any given mineral, the tables for each mineral are prefaced with a detailed description of the underlying methods used for estimating the volume and value of production. In addition, commentary on special features of a series is made, when appropriate, in footnotes to tables.

VOLUME AND VALUE OF PRODUCTION

METHOD

Due to the different methods used in measuring the volume of production for various metals, only the value-of-production figures are given.

SOURCE

S.C. and Information Systems Division, Mineral Policy Sector, Energy, Mines and Resources.

MNR - Annual Reports of the Ontario Department of Mines.

TOTAL METALS: VALUE OF PRODUCTION
MNR and SC Series, 1945-1979

Year	MNR Series Value ($)	SC Series Value ($)
1945	188 210 393	188 251 716
1946	156 491 746	157 061 148
1947	207 659 405	207 550 402
1948	245 679 009	244 480 800
1949	266 450 416	265 762 572
1950	302 450 548	302 552 290
1951	367 084 537	366 793 830
1952	362 615 447	360 897 380
1953	370 926 750	370 596 090
1954	395 185 129	395 202 860
1955	471 039 709	470 910 010
1956	521 954 557	521 311 420
1957	601 785 629	600 980 820
1958	629 844 610	629 295 440
1959	806 755 669	806 143 530
1960	818 565 684	817 803 020
1961	781 176 778	780 784 840
1962	729 890 328	729 769 940
1963	683 639 445	683 175 290
1964	701 643 732	701 272 210
1965	776 220 397	776 031 530
1966	732 411 604	732 411 600
1967	970 906 229	970 906 230
1968	1 122 956 239	1 122 956 200
1969	1 001 021 179	1 001 021 200
1970	1 354 391 094	1 354 391 100[a]
1971	1 290 618 170	1 290 618 200
1972	1 254 799 959	1 254 716 449
1973	1 521 831 172	1 521 831 172
1974	2 049 706 872	2 049 706 872
1975	1 963 694 000	1 963 694 000
1976	2 223 006 140	2 223 006 140
1977	2 436 139 872	2 436 139 872
1978	2 048 533 822	2 048 533 822
1979	2 544 643 000	2 544 643 000

[a]Data for uranium are not included for years 1970-1975 (inclusive)

ANTIMONY

METHODS

Only two years of production are reported, and these by Statistics Canada only. Production consists of recoverable metal contained in export shipments of silver-lead-bismuth bullion obtained in the treatment of ores from the cobalt-producing district of the province. The shipments are valued at the average New York price for the fine metal. (D.B.S., Annual Report on the Mineral Production of Canada, 1938, p.32.)

ANTIMONY: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1925-1926

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1925	1 751	794	206
1926	1 596	723	281

BERYLLIUM

METHOD

There is only one year of reported production of beryllium (1950). Quantity produced is not available. The value of the shipment of ores as reported by the producer is $7,882. (Annual Report of the Ontario Department of Mines, 60 (1951), p. 34.)

BISMUTH

METHODS

Volume of Production

The first year of production was 1923. The Ontario Department of Mines based estimates on recoveries from bullion produced from silver mines for 1923 and 1924. No valuation was reported for these years. After 1924, the Ontario and Statistics Canada production and valuation methods agree.

Production estimates include:

1924-58: recoverable bismuth metal in silver-lead-bismuth bullion shipped to foreign smelters;
1959-74: bismuth content of silver-lead-bismuth bullion shipped to smelters, Canadian or foreign, and bismuth content of impure metal shipped;
1975: recoverable bismuth (metal paid for) in bullion and concentrates shipped to smelters;
1929-79: also, bismuth metal produced at Canadian smelters;
1950-58: also, recoverable metal in ores exported.

Value of Production

1924-58: recoverable bismuth metal in bullion shipments valued at an arbitrary price;
1959-74: bismuth content of bullion shipments and bismuth content of impure metal shipped valued as reported by producer;
1975: recoverable bismuth in bullion and concentrates shipped to smelters, valued at the average New York price for bismuth metal in Canadian dollars;
1929-48: bismuth metal produced at Canadian smelters valued at the average New York price for bismuth metal;
1949-58: bismuth metal produced at Canadian smelters valued at the average New York price for bismuth metal, but converted to Canadian dollars;
1959-79: bismuth metal produced at Canadian smelters valued as reported by the producer;
1950-58: recoverable metal in ores exported valued at the average New York price in Canadian dollars.

Methods were not published for 1951 to 1958, and the 1950 definitions are assumed to apply to these years.

DATA SELECTION

Data from the Statistical Files are reproduced in the table following. The Ministry of Natural Resources and Statistics Canada data are generally in agreement, with differences appearing in only four years. Statistics Canada reports no production figures for 1923, and reports a value of production for 1924 of $27,913 and $18,566 for 1925. The quantities for these two years are identical to the figures in the Statistical Files. For 1951, the Statistics Canada volume and value of production figures are 15,000 pounds and $35,400 respectively. These figures are likely preliminary and were not subsequently adjusted.

BISMUTH: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1923-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1923	18 878	8 562	48 139
1924	12 863	5 834	16 079
1925	19 667	8 920	18 596
1926	6 440	2 921	6 440
1927	2 072	939	1 003
1928	14 002	6 351	5 067
1929	27 446	12 449	23 413
1930	12 732	5 775	6 366
1931	7 331	3 325	3 532
1932	16 798	7 619	7 289
1933	7 580	3 438	3 731
1934	7 552	3 425	3 444
1935	7 079	3 210	6 796
1936	3 552	1 611	3 516
1937	5 711	2 590	5 654
1938	9 516	4 316	9 754
1939	0	0	0
1940	17 789	8 068	24 620
1941	7 499	3 401	10 379
1942	2 333	1 058	3 219
1943	0	0	0
1944	0	0	0
1945	0	0	0
1946	0	0	0
1947	0	0	0
1948	5 362	2 432	10 724
1949	0	0	0
1950	0	0	0
1951	15 763	7 149	34 048
1952	0	0	0
1953	0	0	0
1954	0	0	0
1955	0	0	0
1956	6 980	3 166	10 586
1957	14 214	6 447	21 372
1958	18 581	8 428	26 779
1959	31 457	14 268	37 748
1960	37 835	17 161	45 402
1961	19 923	9 036	22 388
1962	0	0	0
1963	65	29	146
1964	541	245	703
1965	3 883	1 761	9 600
1966	6 312	2 863	15 881
1967	4 272	1 937	18 412
1968	0	0	0
1969	2 269	1 029	11 209
1970	13 701	6 214	85 905
1971	20 910	9 484	113 541
1972	22 304	10 116	80 071
1973	4 077	1 849	20 059
1974	16 169	7 334	132 553
1975	5 378	2 439	42 325
1976	96	44	710
1977	-	-	-
1978	-	-	-
1979	-	-	-

CADMIUM

METHODS

Cadmium is associated with zinc deposits. Ontario figures for production of cadmium include recoverable cadmium in zinc concentrates exported from the province, and cadmium metal recovered at the Texasgulf refinery in Timmins, which went into operation in 1972. All cadmium products are valued at the average New York price converted into Canadian dollars.

These methods apply to the entire period 1964-79, and have been used by the provincial and federal statistics agencies to produce identical volume and value of production series.

CADMIUM: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1964-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1964	187 609	85 098	607 853
1965	209 724	95 129	583 033
1966	217 237	98 537	560 471
1967	2 024 006	918 073	5 667 217
1968	2 732 729	1 239 545	7 788 278
1969	3 075 505	1 395 025	10 825 778
1970	2 351 277	1 066 521	8 370 546
1971	2 414 008	1 094 975	4 683 176
1972	2 575 274	1 168 124	6 515 443
1973	2 764 697	1 254 045	10 063 497
1974	1 680 019	762 043	6 681 436
1975	1 468 335	666 025	5 011 427
1976	1 617 883	733 859	4 246 943
1977	1 329 485	603 044	4 187 878
1978	1 141 902	517 958	3 191 616
1979[a]	1 483 000	673 000	4 796 000

[a]Beginning in 1979, the reporting base was changed to the nearest thousand.

CALCIUM

METHODS

The data for calcium production date from 1945. Chromasco Ltd. (formerly Dominion Magnesium Ltd.) has been the only producer of calcium in Ontario (and in Canada). The firm recovers calcium metal from lime at its plant in Haley, Ontario.

The volume of production, as derived by both the Ontario Ministry and Statistics Canada, includes calcium metal plus the calcium content of alloys. For 1945-58, production is valued at the average New York price expressed in Canadian funds, and for 1959-79 as reported by the producer. (The methods were not published for 1951-58, and it is assumed that the 1950 valuation method applies to these years.)

The volume and value of production series in the Ontario Statistical Files and in the Statistics Canada sources are identical.

CALCIUM: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1945-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1945	22 720	10 305	19 312
1946	53 548	24 288	68 720
1947	602 665	273 364	642 607
1948	895 203	406 057	1 723 266
1949	520 609	236 144	1 041 551
1950	a	a	a
1951	a	a	a
1952	a	a	a
1953	a	a	a
1954	a	a	a
1955	a	a	a
1956	394 900	179 123	515 305
1957	221 225	100 345	282 378
1958	25 227	11 442	31 256
1959	67 429	30 585	76 409
1960	134 801	61 144	159 241
1961	99 355	45 066	100 881
1962	123 511	56 023	124 412
1963	98 673	44 757	117 247
1964	138 357	62 757	151 694
1965	159 434	72 318	152 848
1966	249 179	113 025	245 125
1967	543 692	246 614	535 509
1968	468 512	212 513	450 946
1969	942 682	427 593	953 522
1970	443 557	201 194	374 476
1971	355 247	161 137	291 504
1972	469 378	212 906	337 609
1973	651 921	295 706	489 813
1974	1 049 587	476 084	915 487
1975	944 213	428 287	1 004 674
1976	1 133 096	513 964	1 432 505
1977	1 082 152	490 856	1 801 506
1978	1 267 138	574 764	2 688 932
1979[b]	1 005 000	456 000	2 152 000

[a]Data for 1950 to 1955 are confidential.
[b]Beginning in 1979, the reporting base was changed to the nearest thousand.

CERIUM

METHODS

Cerium (a rare earth metal) was produced in only one year. In 1955, fifteen tons of material were shipped to the United States for experimental purposes. The value, as reported by the shipper, was $988. (Annual Report of the Ontario Department of Mines, 65 (1956), pp. 2, 23.)

CHROMITE

METHODS

Production is the tonnage of ores and concentrates shipped and valued as reported by the producer. Only four years of production are reported.

DATA SELECTION

Statistics Canada reports production of 378 tons for 1936. Otherwise, data from Statistics Canada and the Statistical Files agree.

CHROMITE: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1934-1937

Year	Volume of Production (Short Tons)	Volume of Production (Tonnes)	Value of Production (Dollars)
1934	40	36	480
1935	798	723	9 576
1936	338	306	5 070
1937	4 062	3 684	39 964

COBALT

METHODS

Volume of Production

Statistics Canada production figures include:

1904-10: cobalt content of ore shipments;
1911-21: cobalt content of all smelter products sold or shipped;
1922-23: cobalt content of products produced;
1924-79: cobalt content of all smelter products sold or shipped by Ontario smelters plus the cobalt content of ores, concentrates and residues shipped for export.

Production estimates of the Ontario Ministry of Natural Resources are based on the following:

1904: cobalt content of shipments of ores and concentrates from the Sudbury area; assay cobalt content of shipments of silver-cobalt ores;
1905-13: cobalt content of shipments of silver-cobalt ores;
1914: metallic content of cobalt oxide shipped;
1915-23: shipments of recoveries of cobalt metal, cobalt oxide and the cobalt content of residues;
1946: cobalt recovered at the Deloro Smelting and Refining Company;
1947-48: cobalt recovered at the Deloro Smelting and Refining Company plus the cobalt content of ore shipped to destinations other than Deloro and the production of cobalt oxides at the Port Colborne plant of Inco;
1924-45, 1949-79: methods identical to Statistics Canada.

Value of Production

Statistics Canada valuation methods are as follows:

1904-15: the sum reported by the producer;
1916-17, 1921-23: the average New York price for cobalt;
1918-20: a nominal price of $2.50 per pound (New York price 'not available');
1924-25: the selling value at the plant as reported by the producing companies;
1926-39: the net amount received by the shipper;
1942: the gross amount received by the shipper plus the value of ores exported valued according to grade and at agreed prices per pound;
1940-41, 1943-49: the gross amount received by the shipper;
1950-79: cobalt content of all smelter products sold or shipped valued at the total sales value reported by the smelters; cobalt contained in ores, concentrates and residues exported valued at the gross value received by shippers (1950-74), and at the average Port Colborne price (1979).

Among the discontinuities in the valuation procedures, it should also be noted that 'prior to 1935 the net selling value of products was considered to be the amount received by the shipper. Beginning with 1935 . . . the net value of sales [is computed] by deducting the cost of fuel, electricity and process supplies from the amount received for products sold. Therefore, this figure is not comparable with similar figures in reports for years prior to 1935.' (D.B.S., Annual Report on the Mineral Production of Canada, 1936, p. 4.)

The Ontario Ministry of Natural Resources uses the sum reported by the shipper from 1904 to 1923, and follows Statistics Canada methods from 1924 to 1979. For the years 1946-48, it has been noted above that the Ministry's methods departed from those employed by Statistics Canada in estimating the quantity of production. Whether different methods were used by Ontario to estimate value could not be determined since the method of valuation was not reported for those years.

DATA SELECTION

In addition to the data series from the Statistical Files, the Statistics Canada volume and value of production data are reproduced for 1904-25, 1936, and 1946-48. The two sets of data are in harmony for all of the other years.

COBALT: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1904-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1904	58 000	26 308	36 620
1905	236 000	107 047	100 000
1906	642 000	291 206	80 704
1907	1 478 000	670 409	92 751
1908	2 448 000	1 110 394	111 118
1909	3 066 000	1 390 714	54 965
1910	2 196 000	996 088	54 699
1911	1 706 000	773 828	170 890
1912	1 872 000	849 124	315 781
1913	1 188 526	539 106	420 386
1914	643 988	292 108	546 749
1915	426 641	193 521	379 657
1916	1 020 244	462 774	762 327
1917	815 098	369 722	1 122 779
1918	881 931	400 037	1 615 130
1919	747 986	339 280	1 009 479
1920	736 932	334 266	1 603 736
1921	204 098	92 577	502 370
1922	507 764	230 317	1 080 873
1923	1 476 697	669 818	1 803 872
1924	1 279 777	580 497	1 662 526
1925	1 466 262	665 085	2 328 517
1926	664 778	301 538	1 136 014
1927	880 590	399 428	1 764 534
1928	954 860	433 117	1 671 900
1929	929 415	421 575	1 801 915
1930	694 163	314 867	1 144 007
1931	521 051	236 344	651 179
1932	490 631	222 546	587 957
1933	466 702	211 692	597 752
1934	594 671	269 738	592 497
1935	681 419	309 086	512 705
1936	887 592	402 604	803 580
1937	507 064	230 000	848 145
1938	459 226	208 301	790 913
1939	732 561	332 284	1 213 454
1940	794 359	360 315	1 235 220
1941	263 257	119 411	255 904
1942	83 871	38 043	88 444
1943	175 961	79 814	191 407
1944	36 283	16 457	34 106
1945	109 123	49 497	90 026
1946	75 848	34 404	64 471
1947	578 403	262 359	955 917
1948	1 545 744	701 137	2 624 410
1949	619 065	280 803	952 469
1950	583 806	264 809	964 003
1951	951 607	431 641	1 999 612
1952	1 421 923	644 973	3 226 903
1953	1 602 545	726 902	4 013 077
1954	2 252 965	1 021 927	5 912 997
1955	3 296 270	1 495 162	8 510 314
1956	3 392 543	1 538 831	8 781 626
1957	3 750 596	1 701 241	7 541 258
1958	2 436 064	1 104 980	4 866 767
1959	2 835 684	1 286 244	5 414 246
1960	3 258 401	1 477 985	6 312 921
1961	2 884 420	1 308 350	4 309 912
1962	2 649 193	1 201 653	4 765 808
1963	2 156 732	978 277	4 409 262
1964	2 212 016	1 003 353	4 259 215
1965	2 620 810	1 188 779	5 511 436
1966	2 684 235	1 217 548	5 464 495
1967	2 929 470	1 328 785	5 967 044
1968	3 221 025	1 461 032	6 957 851
1969	2 553 583	1 158 285	5 421 046
1970	3 692 529	1 674 902	8 211 391
1971	3 511 207	1 592 656	7 650 337
1972	2 593 814	1 176 534	6 387 560
1973	2 528 297	1 146 816	6 913 957
1974	2 775 392	1 258 896	8 141 841
1975	2 399 759	1 088 512	10 277 852
1976	2 532 997	1 148 948	10 942 034
1977	2 784 530	1 263 042	16 052 589
1978	1 999 628	907 016	24 026 091
1979[a]	2 818 000	1 278 000	86 300 000

[a]Beginning in 1979, the reporting base was changed to the nearest thousand.

COBALT: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1904-1948

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1904	32 000	14 514	19 960
1905	236 000	107 047	100 000
1906	642 000	291 206	80 704
1907	1 478 000	670 409	104 426
1908	2 448 000	1 110 394	111 118
1909	3 066 000	1 390 714	94 965
1910	2 196 000	996 088	54 699
1911	1 704 000	772 921	170 890
1912	1 868 000	847 310	314 381
1913	1 642 000	744 798	420 386
1914	889 027	403 255	571 710
1915	504 212	228 706	536 268
1916	840 536	381 260	924 590
1917	1 079 572	489 685	1 727 315
1918	1 347 544	611 235	3 368 860
1919	530 371	240 572	1 325 928
1920	546 023	247 671	1 365 058
1921	251 986	114 298	755 958
1922	569 960	258 529	1 852 370
1923	888 061	402 817	2 530 974
1924	948 704	430 324	1 682 395
1925	1 116 492	506 432	2 328 517
1926	a	a	a
1927	a	a	a
1928	a	a	a
1929	a	a	a
1930	a	a	a
1931	a	a	a
1932	a	a	a
1933	a	a	a
1934	a	a	a
1935	a	a	a
1936	887 591	402 604	804 676
1937	a	a	a
1938	a	a	a
1939	a	a	a
1940	a	a	a
1941	a	a	a
1942	a	a	a
1943	a	a	a
1944	a	a	a
1945	a	a	a
1946	73 900	33 520	70 215
1947	572 673	259 760	875 644
1948	1 544 852	700 733	2 029 178

[a]Figures for 1926-35 and 1937-45 are identical to MNR Series.

COPPER

METHODS

Volume of Production

Inclusion of the copper content of nickel-copper matte exported is common to both Ministry of Natural Resources and Statistics Canada production estimates over the entire period 1891-1975. Statistics Canada specifies that no allowance is made for losses in the treatment of the matte, since practically all of the copper is recovered in the refining process. (D.B.S., General Review of the Mining Industry, 1950 (26-201), p. A-37; S.C., General Review of the Mineral Industries, 1975 (26-201), p. 65.) The notes on methods for computing copper production in D.B.S., Annual Report on the Mineral Production of Canada, 1926 (p. 374) indicate that the consistent practice was not to make any allowance for losses in treating the matte. Additional components in the Statistics Canada series include:

1891-1928: copper in cobalt-nickel and gold ores exported (with deductions of 26 pounds per ton of concentrates for copper in concentrates from gold ores, and 20 pounds per ton of concentrates for copper in cobalt-nickel ores) and copper paid for in concentrates from silver-cobalt ores exported;

1926-28: copper content of blister (converter) copper made at Port Colborne;

1929-79: recoverable copper in ores and concentrates exported and copper content of blister copper at Ontario smelters.

Recoverable copper in ores and concentrates exported is computed as total copper content, less an allowance for smelter losses of ten pounds of copper per ton of concentrates. (D.B.S., General Review of the Mining Industry, 1950 (26-201), p. A-37.)

It should also be noted that estimates of copper production include the copper content of blister copper produced at Ontario smelters rather than production of refined copper metals. This is because secondary copper (made from scrap) is also used in refining. To avoid having to take secondary copper into account in estimating copper production, figures for blister copper are used. (General Review of the Mining Industry, 1950, p. A-37; S.C., General Review of the Mineral Industries, 1974 (26-201), p. 46.)

The production series of the Ontario Ministry of Natural Resources include, in addition to the copper content of nickel-copper matte exported:

1891-1917: copper content of shipments of non-Sudbury area ores;

1917-25-1930-31: estimated copper recovered by U.S. refineries;

1918-25: blister copper and electrolytic copper recovered respectively at refineries in Port Colborne, Ontario (since 1918) and in Deschênes, Quebec (1920-24);

1930-31: metal content of Port Colborne blister copper, and copper contained in Ontario copper ores treated at the Noranda smelter, in lead-silver-copper concentrates exported, and (1930 only) in miscellaneous ores;

1926-29, 1932-79: recoverable copper in ores and concentrates exported and copper content of blister copper made at Ontario smelters - the same as Statistics Canada methods.

Value of Production

Statistics Canada value of production figures are based on:

1891-1925: all copper products valued at the average New York price for electrolytic copper;

1926-79: copper in nickel-copper matte valued at an arbitrary figure (which varies from year to year) agreed upon by the Ontario Ministry of Natural Resources and Statistics Canada;

1926-28: copper in cobalt-nickel and gold ores exported valued at the average New York price for electrolytic copper and copper paid for in concentrates from silver-cobalt ores shipped valued at sales value as reported by the shippers, and copper content of converter copper made at Port Colborne valued pro rata according to the income from sales of copper during the year, as reported by the International Nickel Company of Canada;

1929-31, 1945-58: recoverable copper in ores and concentrates exported valued at the average New York price for electrolytic copper (and translated into Canadian dollars for all years except 1929-30);

1932-44: recoverable copper in ores and concentrates exported valued at the the average London price in Canadian dollars;

1959-79: recoverable copper in ores and concentrates exported valued at the average Montreal price;

1929: copper content of blister copper produced at Ontario smelters valued at the average New York price for electrolytic copper;

1930-31: copper content of blister copper produced at Ontario smelters valued pro rata according to the income from sales of copper;

1932-48: copper content of blister copper produced at Ontario smelters valued at the average London price in Canadian funds;

1949-58: copper content of blister copper produced at Ontario smelters valued at the average New York price in Canadian funds;

1959-79: copper content of blister copper produced at Ontario smelters valued at the average Montreal price.

In valuing the copper in nickel-copper matte, the arbitrary price '. . . is usually about three cents under the Canadian price for the metal and represents as close an approximation as possible to a fair value for the copper in the matte after allowing a margin for treatment of this matte in refineries outside Canada.' (D.B.S. General Review of the Mining Industry, 1950 (26-201), p. A-37; S.C., General Review of the Mineral Industries, 1973 (26-201), p. 46.)

Statistics Canada methods were not published for 1947 and 1948 and from 1951 to 1958. It is assumed that the 1945-46 methods applied in 1947 and 1948, and that the 1950 methods were applicable from 1951 to 1958.

The valuation methods used by the Ontario Ministry of Natural Resources are as follows:

1891-1916: all products valued as reported by the shipper;

1917-25: copper in nickel-copper matte exported valued at an arbitrary price set by the Ministry (Department of Mines);

1926-79: copper in nickel-copper matte exported valued at an arbitrary price agreed upon between Statistics Canada and the Ministry of Natural Resources;

1917-25: copper recovered by U.S. refineries valued at the average New York price;

1918-25: blister and electrolytic copper valued as reported by the producer;

1926-29: copper in ores exported and blister copper produced at Ontario smelters valued (as per Statistics Canada methods) at the average New York price for electrolytic copper;

1930-31: metal content of Port Colborne converter copper valued at the average New York price in 1930 for that portion refined outside Ontario, and the remainder for 1930 and all output in 1931 valued at the sum reported by the producer (valuation of copper contained in ores and concentrates shipped in 1930-31 not specified);

1932-79: recoverable copper in ores and concentrates exported and blister copper produced at Ontario smelters valued as in Statistics Canada methods.

DATA SELECTION

For the years before 1926, the Dominion Bureau of Statistics estimate for the value of production was consistently and often considerably higher than the estimates produced by the Ontario Department of Mines. This was due mainly to the different methods used in valuing the copper in nickel-copper matte exported for refining. The Bureau used the price for refined metal, whereas the Department of Mines valued the copper content on the basis of its processed form (in matte) when shipped out of the province. In 1925, when the federal and Ontario statistics agencies agreed to use the same methods, the method which the Ontario Department of Mines had been using was adopted, and as a result the differences in the value of production series were largely resolved by 1926. Sporadic and small differences continued to exist until 1952. Since then, the two series have agreed.

The volume of production presents less of a problem. There are differences between the series, again notably before 1926, and small differences continued to appear in about half of the years from 1926 to 1952. After 1952 the series are identical.

The volume and value of production series from the Statistical Files of the Ontario Ministry are produced for the period 1891 to 1979. The Statistics Canada figures are presented for the period up to 1952.

COPPER: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1891-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1891	4 024 000	1 825 255	241 440
1892	3 872 000	1 756 309	232 135
1893	2 862 000	1 298 181	115 200
1894	5 496 000	2 492 943	195 750
1895	4 731 000	2 145 945	160 913
1896	3 736 000	1 694 621	130 660
1897	5 500 000	2 494 758	200 067
1898	8 373 500	3 798 155	268 080
1899	5 668 000	2 570 961	176 237
1900	6 728 000	3 051 769	319 681
1901	8 444 000	3 830 133	550 806
1902	8 456 000	3 835 577	644 845
1903	14 462 000	6 559 852	716 806
1904	4 326 000	1 962 240	297 126
1905	9 050 000	4 105 010	688 993
1906	12 064 000	5 472 138	960 813
1907	13 750 000	6 236 895	1 045 511
1908	15 122 000	6 859 223	1 071 140
1909	15 865 264	7 196 362	1 127 016
1910	19 260 000	8 736 189	1 374 103
1911	18 042 000	8 183 713	1 281 591
1912	22 252 000	10 093 337	1 584 310
1913	25 882 868	11 740 271	1 840 492
1914	28 904 814	13 111 003	2 081 332
1915	39 255 484	17 805 988	3 925 118
1916	45 016 875	20 419 311	8 332 253
1917	42 927 755	19 471 702	7 961 193
1918	47 113 920	21 370 514	8 474 448
1919	24 546 071	11 133 910	3 609 687
1920	30 227 016	13 710 743	3 965 695
1921	10 503 179	4 764 161	1 101 730
1922	19 917 563	9 034 454	2 067 365
1923	28 108 707	12 749 895	3 456 073
1924	34 580 646	15 685 517	3 819 797
1925	39 659 791	17 989 378	4 738 432
1926	41 312 867	18 739 201	4 828 964
1927	45 341 295	20 566 465	4 946 533
1928	68 400 738	31 026 052	8 770 149
1929	88 880 853	40 315 676	14 622 609
1930	127 708 478	57 927 591	14 056 224
1931	112 882 625	51 202 697	8 907 069
1932	77 055 413	34 951 747	4 407 928
1933	145 504 720	65 999 830	10 118 847
1934	205 059 539	93 013 442	14 822 704
1935	252 027 928	114 317 945	19 295 965
1936	287 914 078	130 595 628	26 898 920
1937	313 266 041	142 095 085	40 564 887
1938	309 030 106	140 173 698	30 405 500
1939	328 429 665	148 973 190	32 637 305
1940	347 931 013	157 818 852	34 742 229
1941	333 829 767	151 422 635	33 192 644
1942	308 282 415	139 834 551	30 625 404
1943	277 840 533	126 026 345	32 194 369
1944	285 307 278	129 413 204	33 845 632
1945	239 457 242	108 615 977	29 772 270
1946	179 430 423	81 388 270	22 503 827
1947	227 873 343	103 361 609	46 019 294
1948	240 687 191	109 173 873	53 366 733
1949	226 085 423	102 550 622	44 658 786
1950	234 420 544	106 331 370	54 411 033
1951	257 616 806	116 853 017	70 861 788
1952	250 715 175	113 722 490	70 981 618
1953	261 164 653	118 462 293	77 587 440
1954	281 552 361	127 710 002	81 343 536
1955	292 813 108	132 817 791	107 251 943
1956	312 541 701	141 766 530	128 552 450
1957	343 406 269	155 766 463	98 488 877
1958	284 069 476	128 851 746	71 267 895
1959	376 544 371	170 797 653	110 547 037
1960	412 544 528	187 127 050	123 750 235
1961	423 293 547	192 002 723	122 421 860
1962	377 990 690	171 453 692	116 347 723
1963	357 919 536	162 349 570	112 048 454
1964	395 833 331	179 546 978	131 458 795
1965	432 544 119	196 198 712	161 665 138
1966	405 951 287	184 136 406	181 375 552
1967	552 291 827	250 515 358	261 814 899
1968	581 236 227	263 644 317	278 313 194
1969	477 619 761	216 644 679	244 300 501
1970	590 184 892	267 703 363	340 839 782
1971	604 739 883	274 305 396	317 527 865
1972	579 445 166	262 831 906	293 493 836
1973	574 646 559	260 655 294	365 305 858
1974	625 886 355	283 897 275	483 995 146
1975	568 303 206	257 777 998	361 431 937
1976	573 637 656	260 197 664	391 377 336
1977	617 154 302	279 936 482	427 980 593
1978	434 397 447	197 039 368	323 999 680
1979[a]	425 373 000	192 946 000	457 472 000

[a]Beginning in 1979, the reporting base was changed to the nearest thousand.

COPPER: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1891-1952

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1891	4 127 697	1 872 291	531 234
1892	2 203 795	999 624	254 538
1893	3 641 504	1 651 758	391 461
1894	5 207 679	2 362 163	497 854
1895	4 576 337	2 075 791	492 414
1896	3 167 256	1 436 643	344 598
1897	5 500 652	2 495 053	621 023
1898	8 375 223	3 798 937	1 007 539
1899	5 723 324	2 596 056	1 007 877
1900	6 740 058	3 057 238	1 091 215
1901	8 695 831	3 944 362	1 401 507
1902	7 408 202	3 360 303	864 278
1903	7 172 533	3 253 406	949 285
1904	4 913 594	2 228 768	630 070
1905	8 779 259	3 982 204	1 368 686
1906	10 638 231	4 825 420	2 050 838
1907	14 104 337	6 397 619	2 821 432
1908	15 005 171	6 806 231	1 981 883
1909	15 746 699	7 142 582	2 044 237
1910	19 259 016	8 735 742	2 453 213
1911	17 932 263	8 133 937	2 219 297
1912	22 250 601	10 092 702	3 635 971
1913	25 885 929	11 741 659	3 952 522
1914	28 948 211	13 130 687	3 937 536
1915	39 361 464	17 854 059	6 799 693
1916	44 997 035	20 410 311	12 240 094
1917	42 867 774	19 444 495	11 651 461
1918	47 074 475	21 352 622	11 593 502
1919	24 346 623	11 043 442	4 550 627
1920	32 059 993	14 542 168	5 596 392
1921	12 821 385	5 815 682	1 602 930
1922	10 943 636	4 963 949	1 464 477
1923	31 656 800	14 359 282	4 565 227
1924	37 113 193	16 834 261	4 833 622
1925	39 718 777	18 016 134	5 577 311
1926	41 312 867	18 739 201	4 828 964
1927	45 341 295	20 566 465	4 946 533
1928	66 607 510	30 212 658	8 770 149
1929	88 879 853	40 315 223	14 622 572
1930	127 718 871	57 932 305	15 187 259
1931	112 882 625	51 202 697	9 096 463
1932	77 055 413	34 951 747	4 407 928
1933	145 504 720	65 999 830	10 118 847
1934	205 059 539	93 013 442	14 822 704
1935	252 027 928	114 317 945	19 295 965
1936	287 914 078	130 595 628	26 898 920
1937	322 039 208	146 074 527	41 716 364
1938	309 030 106	140 173 698	30 405 500
1939	328 429 665	148 973 190	32 637 305
1940	347 931 013	157 818 852	34 742 229
1941	333 829 767	151 422 635	33 192 644
1942	308 282 414	139 834 550	30 625 404
1943	277 840 560	126 026 358	32 232 027
1944	285 307 278	129 413 204	33 845 632
1945	239 450 875	108 613 089	29 771 633
1946	179 424 639	81 385 647	22 502 528
1947	227 867 613	103 359 010	46 018 544
1948	240 765 806	109 209 532	53 384 560
1949	226 085 423	102 550 622	44 658 786
1950	234 420 544	106 331 370	54 411 033
1951	257 616 806	116 853 017	70 861 789
1952	250 685 175	113 708 882	70 973 056

GOLD

METHODS

Volume of Production

Statistics Canada data are based on gold bullion produced plus recoverable gold in all mine products, covering the entire period from the inception of gold data collection in 1886 through to 1979.

The Ontario Ministry used recoveries of gold bullion at mills as the principal source of production from 1893 to 1953. In addition, recoveries of gold from a variety of other sources are incorporated in various years, as follows:

1912: gold recovered from Sudbury nickel-copper matte shipments for the 6-year period 1907-12 to Inco's Orford, New Jersey works;
1918-26: gold recovered in refining nickel-copper matte;
1919: also includes gold recovered in U.S. refineries from treating cobalt ores;
1921-23: also includes recoveries by Mond Nickel Company at Clydach, Wales;
1924: also includes gold recovered at silver smelters;
1927: gold recovered in refining nickel-copper matte plus gold recovered from silver ores;
1928-53: gold recovered in refining nickel-copper matte, plus estimated gold bullion content of shipments of copper-gold-silver, silver-lead-zinc, and cobalt ores and concentrates.

From 1954 to 1979 Ontario used the same basis for estimating gold production as that used by Statistics Canada.

Since the Ontario Ministry of Natural Resources and Statistics Canada estimates have been similar since 1912, it appears that the various additional items in the Ontario data are encompassed by, if not equivalent to, the Statistics Canada category 'recoverable gold in all mine products.'

Value of Production

The Statistics Canada basis for valuation changed over time as follows;

1891-1930: $20.671834 per troy (fine) ounce (the official U.S. price of gold);
1931-71: the official U.S. Treasury buying price of gold, converted to Canadian funds;
1972-79: the average London Metal Exchange gold price, transposed to Canadian funds.

The change in valuation method in 1931 requires additional comment. In the Annual Report on the Mineral Production of Canada, 1926, the Dominion Statistician observed: 'Prior to 1931 gold was valued at $20.671834 per fine ounce, regardless of what might be defined as normal fluctuations in foreign exchange. Beginning with 1931 and each year since, gold has been valued at the price per ounce in Canadian dollars . . .' (p. 4). A similar comment, with an accompanying rationale for the change in valuation method, first appears in the Annual Report on the Mineral Production of Canada, 1933, p. 3. The explanatory notes on method in the General Review of the Mining Industry, 1949 (26-201) state that gold was '. . . valued at the standard rate of $20.671834 per fine ounce until the end of 1930 and for succeeding years, unless otherwise specified at the average price at the United States Treasury transposed to Canadian funds.' (p. A-44). The average price set by the U.S. Treasury continued to be the basis for valuing gold until 1971.

The Ontario Ministry basis for valuation has been:

1891-92: value of ore mined at a sum reported at the mine;
1893-1911: valuation is uncertain, but is presumably based on receipts reported by mine operators;
1912-29: $20.671834 per ounce;
1930-53: the average New York price of gold, translated into Canadian funds;
1954-79: the same valuation basis as Statistics Canada.

The Ontario valuation method for 1930 to 1953 stipulates the average New York price of gold, whereas Statistics Canada specifies the average price set by the U.S. Treasury. Since the unit values of gold in both series are approximately the same, it is apparent that the average New York price and the price set by the U.S. Treasury were coincident, and that the federal and provincial agencies therefore actually used the same valuation basis over this period.

In using the price for refined gold as a basis of valuation, both the Ontario and Statistics Canada estimates overstate the value of gold production in Ontario. The net return per unit of production to gold producers, which produce an impure product, or to base metallic mineral producers, which produce gold in concentrate as a

by-product, is less than the market price of refined gold.[1]

This lower net price (or netback) is reflected in the unit values of the Ontario Ministry's series antedating 1912. For those years, unit values are generally lower than the $20.67 standard valuation initiated by the federal agency in 1886, and adopted by the Ontario Bureau of Mines in 1912. These lower unit values in the Ontario Ministry's series tend to support the presumption that the valuation of output was based on the net proceeds realized by mine operators for those years.

DATA SELECTION

In addition to the series from the Statistical Files, the Statistics Canada series is reproduced for 1891 to 1958. After 1958 the Statistical Files and Statistics Canada quantity and value data are identical.

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1. This also applies to the value of production of all other metallic minerals which, in their unrefined state, are valued at the market price for the refined metal.

GOLD: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1891-1979

Year	Volume of Production (Troy Ounces)	Volume of Production (Grams)	Value of Production (Dollars)
1891	-	-	2 000
1892	-	-	6 730
1893	-	-	39 382
1894	-	-	32 777
1895	389	12 099	57 322
1896			121 929
1897	9 065	281 953	193 243
1898	14 177	440 953	265 003
1899	27 620	859 078	424 708
1900	18 768	583 750	297 595
1901	14 298	444 717	244 350
1902	8 636	268 609	229 839
1903	5 935	184 599	185 807
1904	647	20 123	16 130
1905	5 429	168 860	100 612
1906	3 442	107 058	66 389
1907	3 821	118 846	66 560
1908	3 475	108 084	60 084
1909	2 051	63 793	32 745
1910	3 619	112 563	68 498
1911	2 185	67 961	43 264
1912	102 278	3 181 201	2 133 589
1913	220 625	6 862 204	4 544 122
1914	268 203	8 342 045	5 545 025
1915	407 125	12 663 096	8 409 750
1916	497 525	15 474 757	10 332 880
1917	420 855	13 090 053	8 697 947
1918	411 876	12 810 775	8 502 482
1919	505 962	15 737 177	10 451 708
1920	565 703	17 595 330	13 067 854
1921	712 570	22 163 404	16 085 413
1922	995 850	30 974 397	20 788 693
1923	974 221	30 301 660	20 417 049
1924	1 241 726	38 621 995	25 872 600
1925	1 461 111	45 445 632	30 152 453
1926	1 497 312	46 571 609	30 952 317
1927	1 627 048	50 606 849	33 679 706
1928	1 578 412	49 094 101	32 631 922
1929	1 622 253	50 457 708	33 696 819
1930	1 736 009	53 995 915	35 923 157
1931	2 085 815	64 876 098	45 016 930
1932	2 287 391	71 145 812	53 418 277
1933	2 155 610	67 046 965	60 752 124
1934	2 105 338	65 483 331	72 808 295
1935	2 220 426	69 062 968	78 067 209
1936	2 389 558	74 323 561	83 308 201
1937	2 587 090	80 467 493	90 508 688
1938	2 896 477	90 090 505	101 945 441
1939	3 086 060	95 987 195	112 114 762
1940	3 261 688	101 449 837	125 579 597
1941	3 194 309	99 354 115	122 977 102
1942	2 763 822	85 964 473	106 413 978
1943	2 117 214	65 852 716	81 517 998
1944	1 731 838	53 866 183	66 675 000
1945	1 625 367	50 554 564	62 576 089
1946	1 801 294	56 026 506	65 998 448
1947	1 939 317	60 319 501	67 876 390
1948	2 095 424	65 174 971	73 339 904
1949	2 354 510	73 233 447	85 269 362
1950	2 481 113	77 171 240	94 216 874
1951	2 462 978	76 607 179	91 105 477
1952	2 513 701	78 184 840	87 540 620
1953	2 182 438	67 881 409	75 388 307
1954	2 361 387	73 447 345	80 460 251
1955	2 523 040	78 475 316	87 223 660
1956	2 513 912	78 191 403	86 489 962
1957	2 578 206	80 191 170	86 621 067
1958	2 716 514	84 493 030	92 192 231
1959	2 683 449	83 464 593	90 083 383
1960	2 732 673	84 995 631	92 774 248
1961	2 637 720	82 042 262	93 533 551
1962	2 421 249	75 309 262	90 578 924
1963	2 338 854	72 746 491	88 291 739
1964	2 155 370	67 039 500	81 365 217
1965	1 946 003	60 527 459	73 420 747
1966	1 660 750	51 655 099	62 626 883
1967	1 495 385	46 511 672	56 450 784
1968	1 379 779	42 915 924	52 031 466
1969	1 229 666	38 246 887	46 346 112
1970	1 162 042	36 143 546	42 484 255
1971	1 133 987	35 270 938	40 079 636
1972	1 019 303	31 703 867	58 720 007
1973	922 303	28 686 829	89 843 380
1974	801 105	24 917 150	124 427 629
1975	755 148	23 487 728	123 678 894
1976	739 547	23 002 483	91 043 412
1977	740 092	23 019 434	116 260 312
1978	700 802	21 797 379	154 461 666
1979	617 000	19 173 000	221 474 000

GOLD: VOLUME AND VALUE OF PRODUCTION,
SC SERIES, 1891-1958

Year	Volume of Production (Troy Ounces)	Volume of Production (Grams)	Value of Production (Dollars)
1891	97	3 017	2 000
1892	344	10 699	7 118
1893	708	22 021	14 637
1894	1 917	59 625	39 624
1895	3 015	93 776	62 320
1896	5 563	173 028	115 000
1897	9 157	284 814	189 294
1898	12 863	400 084	265 889
1899	20 394	634 324	421 591
1900	14 391	447 610	297 495
1901	11 844	368 389	244 837
1902	11 118	345 808	229 828
1903	9 096	282 917	188 036
1904	1 935	60 185	40 000
1905	4 402	136 917	91 000
1906	3 202	99 593	66 193
1907	3 212	99 904	66 398
1908	3 212	99 904	66 398
1909	1 569	48 801	32 425
1910	3 089	96 078	63 849
1911	2 062	64 135	42 625
1912	86 523	2 691 166	1 788 596
1913	219 801	6 836 575	4 543 690
1914	268 264	8 343 943	5 545 509
1915	406 577	12 645 958	8 404 693
1916	492 481	15 317 871	10 180 485
1917	423 261	13 164 888	8 749 581
1918	411 976	12 813 885	8 516 299
1919	505 739	15 730 241	10 454 553
1920	564 995	17 573 308	11 679 483
1921	708 213	22 027 886	14 640 062
1922	1 000 340	31 114 051	20 678 862
1923	971 704	30 223 372	20 086 904
1924	1 241 728	38 622 058	25 668 795
1925	1 461 039	45 443 392	30 202 357
1926	1 497 215	46 568 592	30 950 180
1927	1 627 050	50 606 911	33 634 108
1928	1 578 434	49 094 785	32 629 126
1929	1 622 267	50 458 143	33 535 234
1930	1 736 012	53 996 008	35 886 532
1931	2 085 814	64 876 067	44 980 280
1932	2 280 105	70 919 192	53 534 743
1933	2 155 519	67 044 135	61 647 843
1934	2 105 339	65 483 362	72 634 195
1935	2 220 336	69 060 169	78 133 624
1936	2 378 503	73 979 712	83 318 960
1937	2 587 095	80 467 649	90 522 454
1938	2 896 477	90 090 505	101 883 578
1939	3 086 076	95 987 693	111 538 873
1940	3 261 688	101 449 837	125 574 988
1941	3 194 308	99 354 084	122 980 858
1942	2 763 819	85 964 380	106 407 032
1943	2 117 215	65 852 747	81 512 777
1944	1 731 836	53 866 120	66 675 686
1945	1 625 368	50 554 595	62 576 668
1946	1 813 333	56 400 960	66 639 988
1947	1 944 819	60 490 632	68 068 665
1948	2 095 377	65 173 509	73 338 195
1949	2 354 509	73 233 416	84 762 324
1950	2 481 110	77 171 147	94 406 236
1951	2 462 979	76 607 210	90 760 776
1952	2 513 691	78 184 529	86 144 190
1953	2 182 437	67 881 378	75 119 481
1954	2 361 385	73 447 283	80 452 387
1955	2 523 040	78 475 316	87 095 340
1956	2 513 912	78 191 403	86 604 268
1957	2 578 206	80 191 170	86 498 811
1958	2 716 514	84 493 030	92 307 146

IRON ORE

METHODS

Volume of Production

Production data in both Ontario and Statistics Canada sources show shipments of iron ore from mines. In 1924, however, shipments data unaccountably include only that portion shipped (exported) to points other than Ontario blast furnaces. There was no production of iron ore in Ontario from 1925 to 1938.

Value of Production

Shipments are valued at the point of shipment as reported by the shipper.

DATA SELECTION

Since there are frequent differences between the Statistical Files and Statistics Canada data series over the period antedating 1925, the Statistics Canada volume and value of production series for 1896 to 1924 are also presented. Statistics Canada sources indicate that the value of production is not available for 1896-97 and 1900-05, although such information is contained in the Statistical Files of the Ministry for 1900-05.

After 1938, the volume and value of production series agree in the Statistical Files and Statistics Canada, with only two minor exceptions. Statistics Canada data for the volume and value of production for 1940 are 414,603 short tons and $1,211,305. For 1954, only the value of production figures differ; the Statistics Canada estimate is $20,365,003.

IRON ORE: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1896-1979

Year	Volume of Production (Short Tons)	Volume of Production (Tonnes)	Value of Production (Dollars)
1896	15 270	13 852	a
1897	2 770	2 512	a
1898	20 968	19 021	a
1899	16 911	15 341	30 951
1900	90 302	81 920	111 804
1901	273 354	247 982	152 578
1902	359 288	325 940	518 445
1903	208 154	188 834	450 099
1904	128 253	116 349	273 067
1905	211 597	191 957	227 909
1906	128 099	116 209	301 032
1907	205 295	186 240	482 532
1908	216 177	196 112	593 760
1909	263 777	239 294	645 622
1910	230 656	209 247	513 721
1911	175 631	159 329	445 929
1912	117 357	106 464	238 883
1913	195 937	177 751	424 072
1914	240 059	217 777	531 379
1915	394 053	357 478	764 515
1916	320 487	290 740	763 136
1917	297 239	269 650	823 742
1918	228 479	207 272	1 023 077
1919	195 915	177 731	688 452
1920	126 710	114 949	510 000
1921	58 508	53 077	227 134
1922	16 191	14 688	52 055
1923	30 451	27 624	113 543
1924	44	39	110
1925	0	0	0
1926	0	0	0
1927	0	0	0
1928	0	0	0
1929	0	0	0
1930	0	0	0
1931	0	0	0
1932	0	0	0
1933	0	0	0
1934	0	0	0
1935	0	0	0
1936	0	0	0
1937	0	0	0
1938	0	0	0
1939	123 598	112 126	341 594
1940	404 752	367 184	1 183 861
1941	516 037	468 140	1 426 057
1942	545 119	494 523	1 516 142
1943	498 850	452 549	1 452 250
1944	553 252	501 901	1 909 608
1945	1 135 444	1 030 057	3 635 095
1946	1 549 523	1 405 703	6 822 947
1947	1 919 366	1 741 219	9 313 201
1948	1 336 565	1 212 511	7 482 860
1949	2 011 736	1 825 016	13 192 781
1950	2 435 716	2 209 644	17 562 059
1951	2 841 984	2 578 204	21 205 152
1952	2 717 490	2 465 265	19 632 551
1953	2 832 090	2 569 228	23 137 997
1954	2 416 911	2 192 584	20 341 203
1955	4 362 191	3 957 313	34 340 897
1956	5 558 203	5 042 316	44 177 246
1957	4 867 105	4 415 363	41 317 629
1958	3 644 952	3 306 644	36 851 421
1959	6 018 089	5 459 518	50 830 404
1960	5 325 197	4 830 937	48 399 442
1961	5 772 664	5 236 872	62 350 773
1962	6 414 936	5 819 532	64 479 510
1963	6 749 617	6 123 149	70 033 690
1964	8 046 769	7 299 906	85 613 354
1965	8 475 218	7 688 588	94 209 236
1966	8 144 289	7 388 374	91 700 740
1967	8 649 763	7 846 932	99 903 925
1968	10 907 197	9 894 842	127 137 824
1969	10 516 786	9 540 667	128 166 423
1970	11 828 337	10 730 486	144 765 483
1971	11 178 670	10 141 118	136 205 400
1972	11 755 336	10 664 261	139 514 537
1973	12 424 318	11 271 151	152 468 574
1974	12 021 608	10 905 819	180 089 730
1975	10 476 161	9 503 813	219 024 019
1976	11 112 149	10 080 772	252 317 984
1977	11 375 475	10 319 657	287 810 755
1978	10 582 190	9 600 001	308 366 931
1979[b]	8 681 000	7 875 000	287 191 000

[a]Not available for 1896 to 1898.
[b]Beginning in 1979, the reporting base was changed to the nearest thousand

IRON ORE: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1896-1924

Year	Volume of Production (Short Tons)	Volume of Production (Tonnes)	Value of Production (Dollars)
1896	15 270	13 852	a
1897	2 770	2 512	a
1898	21 111	19 151	63 077
1899	25 126	22 793	100 806
1900	82 950	75 250	a
1901	272 538	247 242	a
1902	359 288	325 940	a
1903	209 634	190 176	a
1904	141 601	128 458	a
1905	193 464	175 507	a
1906	141 078	127 983	337 918
1907	207 769	188 484	488 324
1908	216 177	196 112	528 475
1909	263 893	239 399	653 808
1910	231 445	209 963	513 722
1911	175 586	159 288	446 326
1912	112 321	101 895	222 490
1913	195 680	177 517	427 975
1914	240 079	217 796	531 200
1915	394 429	357 819	766 166
1916	271 967	246 724	706 799
1917	198 113	179 725	703 301
1918	201 119	182 452	833 722
1919	195 649	177 489	686 381
1920	126 900	115 121	507 600
1921	58 499	53 069	227 134
1922	16 190	14 687	52 054
1923	30 447	27 621	113 543
1924	44	39	110

[a]Not available for 1896-97 and 1900-1905.

LEAD

METHODS

Volume of Production

Statistics Canada data are estimated on the basis of recoverable lead in ores and concentrates shipped for export, plus sales of smelter products produced at Galetta (1926(?)-1931). Ontario's methods are identical to those of Statistics Canada after 1925. From 1903 to 1925, the Ontario Ministry estimates of output are generally based on smelter shipments of pig lead (valued at the sum reported by the smelter). Exceptions include 1905, when the basis is the lead content of concentrates shipped (valued at the sum reported by the shipper), and 1918-25, when estimates also included lead recovered from silver-cobalt ores (valued at the average New York price).

It is stated in D.B.S., General Review of the Mining Industry, 1950 (26-201) that 'recoverable lead is computed as total lead content, less five percent of content as an allowance for smelter losses.' (p. A-37.) In 1966, the allowance for smelter losses was reduced to two percent (D.B.S., General Review of the Mineral Industries, 1966 and 1967 (26-201), p. A-48).

Value of Production

The smelter sales from Galetta are valued at the amount reported by the smelting company. Statistics Canada estimates of recoverable lead in ores and concentrates shipped for export are valued at annual average prices, as follows:

1903-08: New York price;
1909-10: Toronto price;
1911-15: Montreal price;
1926-39: London price, translated into Canadian funds;
1940-46: average of prices agreed upon by contract between Canadian producers and the British government;
1947-50: New York price, converted into Canadian funds;
1951-79: Montreal price.

(See M.C. Urquhart and K.A.H. Buckley (Eds.), Historical Statistics of Canada (Toronto: The Macmillan Company of Canada, Limited, 1965) p. 409.)

DATA SELECTION

Ontario Ministry of Natural Resources and Statistics Canada estimates are generally different for both volume and value of production until 1926. From that year to the end of the series the figures of both agencies are identical. Accordingly, the Statistics Canada data for the period 1903-26 are also reproduced.

LEAD: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1903-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1903	50 000	22 679	1 500
1904	86 000	39 008	2 500
1905	282 000	127 913	9 000
1906	2 200 000	997 903	93 000
1907	0	0	0
1908	0	0	0
1909	0	0	0
1910	0	0	0
1911	0	0	0
1912	52 000	23 586	1 290
1913	0	0	0
1914	0	0	0
1915	0	0	0
1916	796 833	361 437	70 863
1917	1 775 674	805 432	172 849
1918	1 670 251	757 613	149 841
1919	1 480 987	671 764	94 507
1920	2 232 253	1 012 532	179 714
1921	3 576 222	1 622 147	191 113
1922	2 895 695	1 313 465	173 742
1923	5 256 623	2 384 364	347 886
1924	5 506 756	2 497 822	419 405
1925	7 268 193	3 296 796	601 704
1926	7 398 796	3 356 037	580 730
1927	7 990 709	3 624 524	528 729
1928	6 814 757	3 091 121	402 289
1929	4 769 506	2 163 411	294 449
1930	2 193 856	995 116	116 034
1931	985 633	447 075	41 987
1932	86 477	39 225	1 756
1933	29 910	13 566	692
1934	21 558	9 778	525
1935	22 532	10 220	706
1936	17 442	7 911	683
1937	29 849	13 539	1 525
1938	22 363	10 143	748
1939	39 130	17 749	1 240
1940	345 455	156 695	11 614
1941	1 622 823	736 100	54 559
1942	3 183 159	1 443 856	107 018
1943	2 273 896	1 031 421	85 362
1944	1 065 741	483 411	47 958
1945	668 762	303 345	33 438
1946	699 244	317 171	47 199
1947	282 765	128 260	38 654
1948	343 883	155 982	62 037
1949	0	0	0
1950	0	0	0
1951	0	0	0
1952	1 803 455	818 033	291 979
1953	656 755	297 899	84 892
1954	2 815 611	1 277 139	375 321
1955	3 853 603	1 747 964	544 148
1956	3 010 163	1 365 386	466 876
1957	1 012 565	459 291	141 354
1958	2 513 224	1 139 979	285 502
1959	3 222 447	1 461 677	341 902
1960	1 661 896	753 823	177 490
1961	1 670 535	757 741	170 562
1962	2 287 087	1 037 405	226 879
1963	3 077 814	1 396 072	338 560
1964	4 054 865	1 839 255	544 974
1965	3 877 218	1 758 676	602 518
1966	3 970 467	1 800 973	593 188
1967	11 058 534	5 016 066	1 548 195
1968	25 800 813	11 703 051	3 467 629
1969	24 193 257	10 973 876	3 670 117
1970	23 920 137	10 849 991	3 784 166
1971	17 830 939	8 087 977	2 407 177
1972	21 210 868	9 621 087	3 272 413
1973	22 992 009	10 428 999	3 710 910
1974	20 221 581	9 172 354	4 187 081
1975	13 651 446	6 192 191	2 766 329
1976	15 224 610	6 905 767	3 448 831
1977	17 942 009	8 138 358	5 648 504
1978	15 565 022	7 060 175	5 731 508
1979[a]	15 364 000	6 969 000	9 206 000

[a]Beginning in 1979, the reporting base was changed to the nearest thousand.

LEAD: VOLUME AND VALUE OF PRODUCTION,
SC SERIES, 1903-1926

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1903	50 000	22 679	2 119
1904	885 000	401 429	38 135
1905	284 212	128 916	13 378
1906	2 200 000	997 903	124 454
1907	0	0	0
1908	0	0	0
1909	0	0	0
1910	0	0	0
1911	0	0	0
1912	0	0	0
1913	33 000	14 968	1 537
1914	0	0	0
1915	88 985	40 362	4 983
1916	685 932	311 133	58 393
1917	1 586 711	719 720	176 712
1918	1 684 366	764 015	155 804
1919	1 487 586	674 757	103 625
1920	2 255 520	1 023 086	201 643
1921	3 312 493	1 502 521	190 203
1922	2 890 397	1 311 062	180 216
1923	4 401 494	1 996 484	315 983
1924	5 055 368	2 293 076	409 687
1925	7 209 534	3 270 189	657 510
1926	7 398 795	3 356 036	580 730

MAGNESIUM

METHODS

Magnesium metal is produced from dolomite. Chromasco Ltd. (formerly Dominion Magnesium Ltd.) has been the only producer of magnesium in Ontario. The firm produces magnesium metal and alloys at its plant in Haley, Ontario; the production of magnesium began in 1942.

The Ontario Ministry of Natural Resources and Statistics Canada use the same methods in deriving the volume and value of production, and their series are identical. Output figures are for magnesium metal plus magnesium content of alloys. Production is valued at the average New York price, translated into Canadian funds, for 1942-58, and at the sum reported by the producer for 1959-79.

The methods were not published for 1951-58; it is assumed that the 1950 definitions apply to these years.

MAGNESIUM: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1942-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1942	437 910	198 632	208 520
1943	7 153 974	3 244 988	2 047 652
1944	10 579 778	4 798 906	2 575 695
1945	7 358 545	3 337 779	1 607 264
1946	320 677	145 456	75 538
1947	24 709	11 207	10 843
1948	0	0	0
1949	0	0	0
1950	a	a	a
1951	a	a	a
1952	a	a	a
1953	a	a	a
1954	a	a	a
1955	a	a	a
1956	14 639 734	6 640 471	4 543 202
1957	15 184 373	6 887 515	4 767 043
1958	9 087 362	4 121 958	2 747 755
1959	8 144 940	3 694 482	2 202 392
1960	14 577 138	6 612 078	4 313 987
1961	15 270 618	6 926 635	4 307 570
1962	17 631 310	7 997 427	4 821 823
1963	17 810 348	8 078 637	5 357 816
1964	18 706 020	8 484 907	5 587 909
1965	20 216 369	9 169 990	6 067 057
1966	13 445 701	6 098 867	4 175 743
1967	17 774 684	8 062 461	5 653 243
1968	19 856 937	9 006 955	6 181 992
1969	21 274 841	9 650 105	7 263 849
1970	20 707 110	9 392 587	7 140 807
1971	14 467 305	6 562 259	5 163 921
1972	11 847 671	5 374 013	4 537 125
1973	13 769 528	6 245 752	5 482 588
1974	13 132 868	5 956 968	9 260 172
1975	8 434 219	3 825 697	8 788 248
1976	13 430 131	6 091 805	12 825 301
1977	16 827 104	7 632 646	17 766 569
1978	18 319 120	8 309 413	19 825 112
1979[b]	19 875 000	9 015 000	24 444 000

[a]Data for 1950 to 1955 are confidential.
[b]Beginning in 1979, the reporting base was changed to the nearest thousand.

MOLYBDENUM

METHODS

The production of molybdenum in Ontario has been sporadic. For the years up to 1944 the Statistics Canada estimates are based on molybdenite (MoS_2) content of ores and concentrates shipped and are valued at their sales value. For 1964, the production figure is the molybdenum content of oxides and sulphides shipped and valued as shown by the shipper. In the series of the Ontario Ministry, production is shipments of molybdenum concentrates for the years 1915-18, 1931, and 1937-38, and valued at the sum reported by the shipper. The same valuation procedure is used for the shipments of molybdenum ore for 1902-03. The methods for the remaining years in the series are identical to those of Statistics Canada.

DATA SELECTION

Since the coverage is disparate and frequent inconsistencies exist, the data from both the Statistical Files and Statistics Canada series are presented.

The Statistical Files show production for 1902 and 1903 of 3.25 and 85 tons of ore, valued at $400 and $1,275 respectively, and then zero production from 1904 to 1914. Statistics Canada does not indicate any production for these years; the first recorded production is for 1914, showing a value of $1,500 but not showing any quantity. The data series in the tables begin at 1915. There has been no commercial production of molybdenum in Ontario since 1964.

MOLYBDENUM: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1915-1964

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1915	1 068	484	14 099
1916	24 562	11 141	26 393
1917	77 517	35 161	108 501
1918	47 614	21 597	59 047
1919	0	0	0
1920	0	0	0
1921	0	0	0
1922	0	0	0
1923	0	0	0
1924	0	0	0
1925	0	0	0
1926	0	0	0
1927	0	0	0
1928	0	0	0
1929	0	0	0
1930	0	0	0
1931	1 222	554	280
1932	0	0	0
1933	0	0	0
1934	0	0	0
1935	0	0	0
1936	0	0	0
1937	16 500	7 484	8 047
1938	13 000	5 896	4 500
1939	482	218	216
1940	0	0	0
1941	0	0	0
1942	423	191	150
1943	0	0	0
1944	2 815	1 276	1 082
1945	0	0	0
1946	0	0	0
1947	0	0	0
1948	0	0	0
1949	0	0	0
1950	0	0	0
1951	0	0	0
1952	0	0	0
1953	0	0	0
1954	0	0	0
1955	0	0	0
1956	0	0	0
1957	0	0	0
1958	0	0	0
1959	0	0	0
1960	0	0	0
1961	0	0	0
1962	0	0	0
1963	0	0	0
1964	11 393	5 167	19 026

MOLYBDENUM: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1915-1964

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1915	23 300	10 568	25 800
1916	0	0	0
1917	68 213	30 940	63 213
1918	42 931	19 473	49 371
1919	0	0	0
1920	0	0	0
1921	0	0	0
1922	0	0	0
1923	0	0	0
1924	0	0	0
1925	0	0	0
1926	0	0	0
1927	0	0	0
1928	0	0	0
1929	0	0	0
1930	0	0	0
1931	1 222	554	280
1932	0	0	0
1933	0	0	0
1934	0	0	0
1935	0	0	0
1936	0	0	0
1937	16 000	7 257	8 147
1938	14 000	6 350	4 500
1939	482	218	216
1940	0	0	0
1941	0	0	0
1942	423	191	150
1943	0	0	0
1944	2 815	1 276	1 082
1945	0	0	0
1946	0	0	0
1947	0	0	0
1948	0	0	0
1949	0	0	0
1950	0	0	0
1951	0	0	0
1952	0	0	0
1953	0	0	0
1954	0	0	0
1955	0	0	0
1956	0	0	0
1957	0	0	0
1958	0	0	0
1959	0	0	0
1960	0	0	0
1961	0	0	0
1962	0	0	0
1963	0	0	0
1964	11 393	5 167	19 026

NICKEL

METHODS

Volume of Production

The basis of the production data in both the Ontario Ministry of Natural Resources and Statistics Canada sources is the nickel content of nickel-copper matte shipped from Sudbury, and covers the entire period, 1890-1979. This base was supplemented over the years in a variety of ways, as itemized below.

Statistics Canada:

1915-24: refined nickel produced and nickel contained in silver-cobalt ores;
1925-75: refined and electrolytic nickel produced; nickel oxides and salts sold from smelters and refineries in Canada;
1925-48: nickel contained in speiss, residues exported;
1959-79: recoverable nickel in concentrates shipped for refining in Alberta.

Ontario Ministry of Natural Resources:

1904-05, 1907, 1912-13: nickel content of ore shipped from silver-cobalt mines;
1912-24: nickel content of shipments from outside Sudbury;
1914: also, nickel content of residue shipped from silver-cobalt ores, and for which payment was received;
1915-24: also, refined nickel and metallic nickel compounds;
1925-79: same as Statistics Canada methods.

Value of Production

Statistics Canada:

1890-1924: all products valued at the average New York price for virgin nickel;

Ontario Ministry of Natural Resources:

1890-1915: selling value of nickel metal in nickel-copper matte at the sum reported by the producers;
1890-1924: all other products valued at the sum reported by the producer (except that nickel contained in silver-cobalt ores was zero-valued for 1906, 1908-11);
1916-24: nickel content of nickel-copper matte valued at a price representative of the value of the nickel in matte set by the Ministry;
1925-79: Common valuation methods were employed by the Ontario Ministry of Natural Resources and Statistics Canada. Nickel content of nickel-copper matte shipped was valued at a price representative of the value of the nickel in matte as agreed upon by Statistics Canada and the Ontario Ministry of Natural Resources. 'This price is a few cents under the Canadian price for the metal and represents as close an approximation as possible to a fair value of nickel in the matte form after allowing a margin for treatment of this matte in refineries outside Canada.' (D.B.S., General Review of the Mining Industry, 1950 (26-201), p. A-38; S.C., General Review of the Mineral Industries, 1974 (26-201), p. 48.) Refined and electrolytic nickel was valued at the average price realized on sales during the year. Nickel in oxides and salts was valued at the total selling value in the form sold. Nickel contained in speiss was valued in the same manner as nickel-copper matte. Recoverable nickel in concentrate shipped was valued at an aribtrary price. Beginning in 1932, refined electrolytic nickel, nickel in oxides and salts, and nickel contained in speiss were all valued in Canadian dollars.

Statistics Canada methods were not published for 1951 to 1958. It is assumed that the 1950 methods applied to these years.

DATA SELECTION

Valuing nickel in matte at the equivalent of finished nickel (in contrast to Ontario's method of valuing the contained nickel as an intermediate product) results in a consistently high estimate of the value of production in the Statistics Canada series from 1890 to 1924. After 1924, however, the differences are small but persist until 1953. Since 1954, the two series have matched.

Discrepancies in the estimates of the volume of production are not as serious a problem. Significant differences were eliminated by 1925. The volume of production series agree since 1949.

VOLUME AND VALUE OF PRODUCTION

Statistics Canada volume and value of production data are produced in the tables for the period 1890 to 1953, along with the data from the Statistical Files for the full period 1890 to 1979.

NICKEL: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1890-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1890	3 560 000	1 614 789	503 740
1891	4 310 000	1 954 983	609 865
1892	4 164 000	1 888 758	590 902
1893	3 306 000	1 499 576	454 702
1894	5 141 000	2 331 918	612 724
1895	4 631 500	2 100 813	404 861
1896	3 897 000	1 767 649	357 000
1897	3 998 000	1 813 462	391 651
1898	5 567 500	2 525 375	514 220
1899	5 744 000	2 605 434	526 104
1900	7 080 000	3 211 433	756 626
1901	8 882 000	4 028 807	1 410 470
1902	11 890 000	5 393 213	2 210 961
1903	13 996 000	6 348 478	2 499 068
1904	9 485 679	4 302 631	1 516 747
1905	19 085 885	8 657 211	3 363 964
1906	21 572 000	9 784 894	3 839 419
1907	21 269 557	9 647 708	2 271 667
1908	19 126 000	8 675 407	1 866 059
1909	26 282 118	11 921 368	2 740 812
1910	37 272 000	16 906 294	4 005 961
1911	34 098 000	15 466 592	3 664 474
1912	44 990 151	20 407 189	4 736 460
1913	49 909 503	22 638 569	5 250 927
1914	45 823 752	20 785 304	5 136 804
1915	68 235 225	30 950 977	17 042 230
1916	82 749 154	37 534 384	20 686 045
1917	83 787 286	38 005 273	21 042 159
1918	92 044 542	41 750 701	27 840 022
1919	43 328 798	19 653 612	11 925 220
1920	57 562 614	26 109 962	15 689 131
1921	16 531 424	7 498 527	4 050 602
1922	30 416 345	13 796 622	7 038 202
1923	53 544 580	24 287 412	9 563 430
1924	61 157 090	27 740 389	11 309 326
1925	73 857 114	33 501 023	15 946 673
1926	65 714 294	29 807 502	14 374 163
1927	66 798 717	30 299 388	15 262 171
1928	99 616 979	45 185 501	22 318 907
1929	113 794 179	51 616 171	27 115 461
1930	105 234 598	47 733 610	24 454 911
1931	65 666 320	29 785 741	15 267 453
1932	30 327 968	13 756 534	7 179 862
1933	83 264 658	37 768 213	20 130 480
1934	128 687 340	58 371 595	32 139 425
1935	138 562 940	62 851 092	35 349 773
1936	169 739 297	76 992 450	43 878 565
1937	224 791 404	101 963 665	59 469 674
1938	210 565 589	95 510 944	53 916 279
1939	226 110 293	102 561 903	50 922 521
1940	245 563 497	111 385 728	59 804 359
1941	282 280 122	128 040 109	68 644 405
1942	285 312 432	129 415 542	70 001 165
1943	288 078 241	130 670 092	71 670 432
1944	274 656 574	124 582 126	69 214 036
1945	245 146 145	111 196 420	61 982 659
1946	192 132 195	87 149 697	45 386 533
1947	237 256 892	107 617 915	70 780 556
1948	263 257 078	119 411 401	87 409 043
1949	257 379 216	116 745 248	99 351 785
1950	247 317 867	112 181 497	112 292 202
1951	275 806 272	125 103 620	151 217 865
1952	281 117 072	127 512 558	151 666 687
1953	287 385 777	130 355 995	160 491 126
1954	316 019 050	143 343 829	176 556 296
1955	322 322 355	146 202 960	198 489 258
1956	335 152 371	152 022 558	208 099 454
1957	354 792 843	160 931 326	243 518 138
1958	254 286 784	115 342 545	177 168 918
1959	347 929 183	157 818 022	240 053 265
1960	403 300 283	182 933 931	277 924 234
1961	392 435 773	178 005 872	295 423 149
1962	333 163 344	151 120 350	274 219 955
1963	298 178 570	135 251 524	246 252 488
1964	324 187 190	147 048 835	267 764 039
1965	382 566 712	173 529 341	316 332 366
1966	320 428 750	145 344 036	269 461 584
1967	380 117 521	172 418 407	352 238 885
1968	407 493 447	184 835 918	405 168 184
1969	293 561 275	133 157 154	329 076 314
1970	448 509 011	203 440 265	608 428 298
1971	431 506 689	195 728 141	583 946 348
1972	378 855 007	171 845 740	519 935 356
1973	393 293 298	178 394 839	574 786 081
1974	460 879 205	209 051 290	749 782 101
1975	394 836 613	179 094 875	811 328 713
1976	413 225 389	187 435 884	882 305 042
1977	396 820 713	179 994 848	927 518 355
1978	206 509 750	93 671 247	474 604 030
1979[a]	194 988 000	88 445 000	566 279 000

[a]Beginning in 1979, the reporting base was changed to the nearest thousand.

NICKEL: VOLUME AND VALUE OF PRODUCTION,
SC SERIES, 1890-1953

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1890	1 435 742	651 242	933 232
1891	4 035 347	1 830 402	2 421 208
1892	2 413 717	1 094 843	1 399 956
1893	3 982 982	1 806 650	2 071 151
1894	4 907 430	2 225 972	1 870 958
1895	3 888 525	1 763 805	1 360 984
1896	3 397 113	1 540 904	1 188 990
1897	3 997 647	1 813 302	1 399 176
1898	5 517 690	2 502 782	1 820 838
1899	5 744 000	2 605 434	2 067 840
1900	7 080 227	3 211 536	3 327 207
1901	9 189 047	4 168 081	4 594 523
1902	10 693 410	4 850 449	5 025 903
1903	12 505 510	5 672 403	5 002 204
1904	10 547 883	4 784 439	4 219 153
1905	18 876 315	8 562 152	7 550 526
1906	21 490 955	9 748 133	8 948 834
1907	21 189 793	9 611 528	9 535 407
1908	19 143 111	8 683 169	8 231 538
1909	26 282 991	11 921 764	9 461 877
1910	37 271 033	16 905 856	11 181 310
1911	34 098 744	15 466 930	10 229 623
1912	44 841 542	20 339 781	13 452 463
1913	49 676 772	22 533 004	14 903 032
1914	45 517 937	20 646 588	13 655 381
1915	68 308 657	30 984 285	20 492 597
1916	82 958 564	37 629 371	29 035 497
1917	84 330 280	38 251 571	33 732 112
1918	92 507 293	41 960 602	37 002 917
1919	44 544 883	20 205 219	17 817 953
1920	61 335 706	27 821 408	24 534 282
1921	19 293 060	8 751 184	6 752 571
1922	17 597 123	7 981 920	6 158 993
1923	62 453 843	28 328 586	18 332 077
1924	69 536 350	31 541 157	19 470 178
1925	73 857 114	33 501 023	15 946 672
1926	65 714 294	29 807 502	14 374 163
1927	66 798 717	30 299 388	15 262 171
1928	96 755 578	43 887 591	22 818 907
1929	110 275 912	50 020 312	27 115 461
1930	103 768 857	47 068 761	24 455 133
1931	65 666 320	29 785 742	15 267 453
1932	30 327 968	13 756 535	7 179 862
1933	83 264 658	37 768 214	20 130 480
1934	128 687 340	58 371 596	32 139 425
1935	138 516 240	62 829 910	35 345 103
1936	169 739 393	76 992 494	43 786 525
1937	224 790 974	101 963 471	59 469 423
1938	210 572 738	95 514 187	53 914 494
1939	226 105 865	102 559 895	50 920 305
1940	245 557 871	111 383 177	59 822 591
1941	282 258 235	128 030 182	68 656 795
1942	285 211 803	129 369 898	69 998 427
1943	288 018 615	130 643 046	71 675 322
1944	274 598 629	124 555 843	69 204 152
1945	245 130 983	111 189 544	61 982 133
1946	192 124 537	87 146 224	45 385 155
1947	237 251 496	107 615 468	70 650 764
1948	263 479 163	119 512 138	86 904 235
1949	257 379 216	116 745 248	99 173 289
1950	247 317 867	112 181 497	112 104 685
1951	275 806 272	125 103 620	151 269 994
1952	281 117 072	127 512 558	151 349 438
1953	287 385 777	130 355 995	160 430 098

PLATINUM GROUP METALS

METHODS

There are five metals in the platinum group: platinum, palladium, rhodium, ruthenium and iridium. The platinum group metals are recovered as by-products of nickel-copper mining operations. The estimating methods for all metals within the platinum group are identical although there are differences between the procedures of Statistics Canada and those of the Ontario Ministry of Natural Resources.

Volume of Production

Statistics Canada production data record recoverable metals in smelter and refinery products shipped. 'Beginning with 1946, the platinum metals production is the assay content of concentrates and refinery residues shipped for export, plus the platinum group metal content of the matte shipped for export.' (General Review of the Mining Industry, 1950 (26-201), p. A-38; General Review of the Mineral Industries, 1975 (26-201), p. 66.)

The methods used by the Ontario Ministry of Natural Resources are the same as those used by Statistics Canada for 1925-29, 1935-36, 1938-39, 1940-41, and 1952-79. Production for all other years is based on recoveries of refined metal, except that for the year 1912 the recoveries of refined metal are for the six years 1907-1912.

Production also includes recoveries from Manitoba ores.

Value of Production

Statistics Canada procedures for valuing production are as follows:

1919-23: average New York price;
1924-30: sales value to the producer;
1931: average New York price;
1932-46: average London price, translated into Canadian dollars;
1947-79: average New York price translated into Canadian funds.

Valuation is on the basis of refined metal prices.

The MNR valuation procedure has not been ascertained for those years when the Ontario Ministry's methods for obtaining volume of production differ from those applied by Statistics Canada. The internal evidence indicates, however, that the valuation methods were the same.

Where there are differences between the two series for the total platinum metals group, the proportional differences between the two series are similar if not identical, for the volume and value of production series.

DATA SELECTION

In the early years, three series are given in the Statistics Canada data: platinum, palladium and other platinum metals. There is, however, a progressive compression of the data over time. From 1919 to 1924 the data are broken down into platinum, palladium and other platinum metals. Then from 1925 to 1959, platinum is the only metal in the group for which a separate series is given. Since 1960, the data have been published only as the platinum group metals. The three Statistics Canada series are presented in the tables: platinum, palladium and total platinum metals. Only the aggregate data for the platinum group metals series for the volume and value of production are available from the Statistical Files of the Ontario Ministry. This series is reproduced in its entirety, while the Statistics Canada series for the platinum group metals is truncated at 1932. By that date the discrepancies between the Statistical Files and Statistics Canada series had been virtually eliminated.

Some disaggregated data for the platinum group metals are available until 1959, from the Annual Reports of the Ministry, for both output and value of production data. Until the early 1930s, quantity and value data are separately published for platinum, palladium and other platinum group metals combined. From the early 1930s to 1959, disaggregated quantity data are published for platinum, palladium and the other platinum group metals. Since 1960, data have been published only for the platinum group totals.

PALLADIUM: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1902-1924

Year	Volume of Production (Troy Ounces)	Volume of Production (Grams)	Value of Production (Dollars)
1902	4 411	137 197	86 014
1903	3 177	98 815	61 952
1904	952	29 610	18 564
1905	1 562	48 583	28 116
1906	314	9 766	5 652
1907	0	0	0
1908	0	0	0
1909	0	0	0
1910	0	0	0
1911	0	0	0
1912	0	0	0
1913	0	0	0
1914	0	0	0
1915	0	0	0
1916	0	0	0
1917	0	0	0
1918	0	0	0
1919	62	1 928	3 534
1920	913	28 397	58 392
1921	591	18 382	38 267
1922	724	22 518	47 060
1923	1 732	53 871	138 560
1924	8 923	277 536	811 993

PLATINUM: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1902-1925

Year	Volume of Production (Troy Ounces)	Volume of Production (Grams)	Value of Production (Dollars)
1902	0	0	0
1903	0	0	0
1904	0	0	0
1905	0	0	0
1906	0	0	0
1907	0	0	0
1908	0	0	0
1909	0	0	0
1910	0	0	0
1911	0	0	0
1912	0	0	0
1913	0	0	0
1914	0	0	0
1915	0	0	0
1916	0	0	0
1917	0	0	0
1918	0	0	0
1919	25	777	1 447
1920	578	17 977	36 961
1921	269	8 366	20 184
1922	458	14 245	44 709
1923	1 210	37 635	141 010
1924	9 181	285 561	1 090 858
1925	8 692	270 351	1 027 477

PLATINUM GROUP METALS: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1902-1979

Year	Volume of Production (Troy Ounces)	Volume of Production (Grams)	Value of Production (Dollars)
1902	6 786	211 068	132 326
1903	4 887	152 002	95 307
1904	1 488	46 281	29 016
1905	1 562	48 583	28 116
1906	314	9 766	5 652
1907	0	0	0
1908	0	0	0
1909	0	0	0
1910	0	0	0
1911	0	0	0
1912	6 582	204 723	227 971
1913	0	0	0
1914	0	0	0
1915	0	0	0
1916	0	0	0
1917	0	0	0
1918	0	0	0
1919	1 770	55 053	200 000
1920	19 066	593 018	1 996 535
1921	13 418	417 346	862 034
1922	11 788	366 647	924 712
1923	15 625	485 991	1 418 633
1924	18 697	581 541	1 891 497
1925	16 980	528 137	1 676 446
1926	19 495	606 362	1 559 527
1927	22 762	707 977	1 270 843
1928	23 539	732 144	1 309 923
1929	29 615	921 129	1 646 381
1930	68 022	2 115 720	2 436 683
1931	91 643	2 850 415	2 812 834
1932	64 897	2 018 522	1 998 911
1933	55 715	1 732 930	1 501 233
1934	200 110	6 224 116	6 187 992
1935	190 107	5 912 988	5 407 392
1936	235 222	7 316 222	7 802 997
1937	259 184	8 061 523	9 931 556
1938	292 203	9 088 529	887 362
1939	284 279	8 842 065	9 421 334
1940	199 985	6 220 228	7 760 157
1941	221 689	6 895 298	8 144 164
1942	507 761	15 793 132	19 176 254
1943	345 710	10 752 782	13 691 748
1944	200 452	6 234 754	8 024 719
1945	666 908	20 743 157	26 688 646
1946	239 337	7 444 212	12 838 214
1947	204 902	6 373 164	9 970 087
1948	269 505	8 382 542	16 896 808
1949	335 916	10 448 155	19 885 049
1950	273 183	8 496 941	17 822 766
1951	318 366	9 902 289	22 490 536
1952	279 722	8 700 326	18 475 723
1953	303 563	9 441 864	20 046 390
1954	343 706	10 690 451	20 906 556
1955	384 746	11 966 938	23 069 365
1956	314 818	9 791 934	22 407 090
1957	416 147	12 943 618	25 731 333
1958	300 458	9 345 288	14 321 443
1959	328 091	10 204 770	16 932 178
1960	483 585	15 041 174	28 871 955
1961	418 278	13 009 900	24 534 349
1962	470 782	14 642 957	28 848 262
1963	357 649	11 124 127	22 585 055
1964	376 238	11 702 309	25 404 117
1965	463 127	14 404 859	36 109 799
1966	395 952	12 315 483	32 363 556
1967	399 898	12 438 218	34 580 361
1968	484 849	15 080 489	46 124 003
1969	308 465	9 594 333	30 729 815
1970	482 428	15 005 188	43 556 597
1971	475 169	14 779 407	39 821 616
1972	402 423	12 516 754	34 330 972
1973	352 909	10 976 696	41 844 285
1974	384 618	11 962 957	60 794 030
1975	399 219	12 417 098	56 493 077
1976	416 821	12 964 582	50 143 112
1977	465 372	14 474 687	61 988 406
1978	346 213	10 768 428	65 292 791
1979[a]	198 000	6 157 000	56 334 000

[a]Beginning in 1979, the reporting base was changed to the nearest thousand.

PLATINUM GROUP METALS: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1902-1932

Year	Volume of Production (Troy Ounces)	Volume of Production (Grams)	Value of Production (Dollars)
1902	4 411	137 197	86 014
1903	3 177	98 815	61 952
1904	952	29 610	18 564
1905	1 562	48 583	28 116
1906	314	9 766	5 652
1907	0	0	0
1908	0	0	0
1909	0	0	0
1910	0	0	0
1911	0	0	0
1912	0	0	0
1913	0	0	0
1914	0	0	0
1915	0	0	0
1916	0	0	0
1917	0	0	0
1918	0	0	0
1919	87	2 706	4 981
1920	2 004	62 331	127 168
1921	917	28 521	68 141
1922	1 573	48 925	123 049
1923	3 246	100 961	324 570
1924	18 697	581 541	1 953 971
1925	16 980	528 137	1 676 446
1926	19 495	606 362	1 559 527
1927	22 762	707 977	1 270 843
1928	23 539	732 144	1 309 923
1929	29 615	921 129	1 646 381
1930	68 040	2 116 280	2 436 683
1931	91 643	2 850 415	2 812 834
1932	64 897	2 018 522	1 187 911

SELENIUM

METHODS

Selenium is recovered as a by-product in the refining of copper from copper-sulphide ores. In Ontario, selenium is recovered at Inco's Copper Cliff refinery. Production is the quantities reported by the company, and is valued at the average London price for the metal (1931-44) and at the average New York price (1945-79).

SELENIUM: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1931-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1931	16 899	7 665	32 108
1932	0	0	0
1933	26 090	11 834	53 745
1934	51 574	23 393	91 286
1935	75 363	34 184	144 697
1936	106 300	48 216	188 151
1937	116 696	52 932	201 884
1938	54 577	24 755	94 691
1939	126 930	57 574	224 539
1940	136 350	61 847	260 429
1941	142 498	64 636	272 171
1942	76 000	34 473	145 920
1943	82 000	37 194	143 500
1944	65 000	29 483	117 000
1945	168 000	76 203	322 560
1946	270 606	122 744	492 503
1947	146 406	66 408	273 779
1948	108 989	49 436	217 978
1949	86 842	39 390	178 026
1950	63 709	28 897	154 176
1951	82 409	37 380	267 005
1952	81 578	37 003	265 128
1953	92 698	42 047	389 332
1954	94 826	43 012	474 130
1955	94 465	42 848	708 488
1956	109 156	49 512	1 473 606
1957	86 459	39 217	951 049
1958	90 295	40 957	677 213
1959	101 400	45 994	709 800
1960	144 500	65 544	1 011 500
1961	164 800	74 752	1 071 200
1962	142 915	64 825	821 761
1963	95 100	43 136	461 235
1964	104 905	47 584	508 789
1965	123 175	55 871	597 399
1966	111 000	50 348	538 350
1967	134 800	61 144	653 780
1968	127 500	57 833	618 375
1969	84 000	38 101	480 480
1970	131 506	59 650	1 130 952
1971	128 000	58 059	1 163 520
1972	108 783	49 343	969 257
1973	94 950	43 068	867 843
1974	128 504	58 288	2 023 938
1975	107 700	48 851	1 971 987
1976	108 400	49 169	1 924 100
1977	117 174	53 149	2 128 700
1978	69 403	31 481	1 487 700
1979[a]	40 000	18 000	581 000

[a]Beginning in 1979, the reporting base was changed to the nearest thousand.

SILVER

METHODS

Volume of Production

Statistics Canada production figures include:

1898-1921: sales of silver bullion plus estimated silver content of shipments of gold bullion and silver content of shipments of silver-bearing ores;
1922-49: silver bullion produced plus silver content of gold bullion shipments, and silver recoverable in other smelter products and in ores exported;
1950-79: silver bullion produced; silver recovered in crude gold bullion produced, in blister copper made at Canadian smelters, and in nickel-copper matte shipped for export; recoverable silver in ores and concentrates shipped for export.

No direct information is available in published data sources on the computation of output estimates for 1951 to 1958. Since the published 1950 and 1959 methods are identical, it is assumed that the 1950 method is applicable throughout the 1950s.

Ontario Ministry of Natural Resources production figures have been derived as follows:

1898: silver bullion shipped;
1899-1911,
1913-17: silver bullion shipped plus estimated silver content of crude gold bullion and silver bullion content of ores, concentrates and residues shipped;
1912: silver bullion shipped, plus estimated silver content of crude gold bullion and silver content of ores, concentrates and residues shipped, plus silver recovered from Sudbury nickel-copper matte shipments for the six-year period 1907-12 to Inco's Orford, New Jersey works;
1918-23: silver bullion shipped, plus estimated silver content of crude gold bullion and silver content of ores, concentrates and residues shipped, plus silver recovered by nickel-copper refineries;
1924-28: sales of silver bullion by reduction companies, smelters and mines, plus silver content of crude gold bullion, plus silver contained in ores, concentrates and residues exported, plus silver recovered by nickel-copper refineries;
1929-53: includes the same coverage as for 1924-28, plus estimated silver recovered from Ontario ores and concentrates treated in other provinces;
1954-79: same as Statistics Canada methods.

Value of Production

The Statistics Canada valuation bases were:

1898-1930: the average New York price of silver (not converted into Canadian funds);
1931-50: the average New York price of silver, translated into Canadian funds;
1951-68: the average Montreal price;
1969-79: the average Toronto price.

As mentioned above, the Statistics Canada methods are not published for the years 1951 to 1958. A secondary source indicates, however, that the basis of valuation was changed from the New York to the Montreal price in 1951. (M.C. Urquhart and K.A.H. Buckley (Eds.), Historical Statistics of Canada, (Toronto: The Macmillan Company of Canada Limited, 1965), p. 409.)

Ontario Ministry of Natural Resources used the following values:

1898: the average New York price of silver for the last six months of 1898;
1899-1953: the gross revenues reported by the mine operator (before deducting treatment and shipping charges);
1954-79: same as Statistics Canada.

DATA SELECTION

The Ontario and Statistics Canada data for the volume and value of silver production are different for virtually every year from 1898 to 1952. In 1953, the discrepancies disappear for the volume of production. It is not until 1959, however, that agreement between the two series of value of production is established. From 1952 to 1958, though, the differences between the two series are very small.

The persistent differences in the estimates of value of production are due to a combination of dissimilar methods for estimating both output and value of production, especially output, and are traceable mainly to conceptual differences in

estimating silver bullion. The Ontario statistical agency used sales (or shipments) of bullion, whereas the Statistics Canada data are based on the quantity of bullion produced. The concepts used by the two statistical agencies for the other components making up the aggregate for silver production are similar for the 1922-1958 period.

Along with the complete Statistical Files series, the Statistics Canada series for the volume and value of production are reproduced for the period 1898-1958.

SILVER: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1898-1979

Year	Volume of Production (Troy Ounces)	Volume of Production (Grams)	Value of Production (Dollars)
1898	86 600	2 693 561	51 960
1899	104 000	3 234 761	62 090
1900	160 612	4 995 591	96 367
1901	145 000	4 510 004	80 088
1902	96 666	3 006 648	58 000
1903	16 000	497 655	8 640
1904	206 881	6 434 718	111 893
1905	2 473 552	76 936 067	1 372 877
1906	5 433 984	169 015 795	3 689 286
1907	9 996 887	310 937 942	6 146 904
1908	19 444 397	604 788 350	9 136 975
1909	26 006 450	808 891 014	12 646 073
1910	30 901 242	961 136 063	15 624 312
1911	31 499 410	979 741 168	16 175 229
1912	30 721 026	955 530 719	17 699 391
1913	29 797 060	926 792 164	16 588 887
1914	25 172 982	782 967 261	12 830 913
1915	24 354 882	757 521 507	11 950 198
1916	19 959 116	620 797 901	12 672 536
1917	19 479 288	605 873 532	16 182 966
1918	17 413 506	541 620 579	17 414 283
1919	11 335 018	352 558 469	12 904 348
1920	11 065 507	344 175 740	10 859 320
1921	8 427 102	262 112 171	5 667 071
1922	10 912 114	339 404 684	7 793 755
1923	10 635 724	330 807 994	6 840 872
1924	10 287 994	319 992 382	6 939 240
1925	12 035 119	374 334 044	8 298 106
1926	10 389 156	323 138 872	6 343 415
1927	9 047 598	281 411 754	5 171 753
1928	7 218 271	224 513 324	4 189 713
1929	8 518 816	264 964 795	4 381 028
1930	10 566 498	328 654 825	4 026 894
1931	7 185 593	223 496 925	2 208 449
1932	5 768 230	179 412 007	1 755 186
1933	5 076 927	157 910 081	1 887 398
1934	5 284 736	164 373 663	2 485 893
1935	6 265 035	194 864 370	4 013 157
1936	5 132 583	159 641 176	2 294 402
1937	4 507 683	140 204 613	2 011 538
1938	4 403 334	136 958 996	1 914 602
1939	4 633 589	144 120 727	1 860 728
1940	5 083 671	158 119 843	1 852 110
1941	4 756 679	147 949 254	1 787 633
1942	4 311 631	134 106 714	1 748 491
1943	3 152 765	98 061 953	1 360 417
1944	2 947 871	91 689 037	1 239 961
1945	2 861 188	88 992 894	1 321 491
1946	2 608 365	81 129 220	2 171 545
1947	2 413 827	75 078 412	1 715 401
1948	2 776 544	86 360 171	2 155 682
1949	2 941 433	91 488 793	2 209 831
1950	4 925 337	153 195 105	4 082 207
1951	6 115 694	190 219 346	5 781 939
1952	6 017 665	187 170 303	5 021 323
1953	5 154 619	160 326 572	4 331 199
1954	5 443 721	169 318 649	4 530 484
1955	6 051 017	188 207 666	5 337 163
1956	6 626 447	206 105 540	5 940 586
1957	6 910 130	214 929 068	6 034 598
1958	9 815 257	305 288 618	8 529 142
1959	10 540 856	327 857 270	9 252 763
1960	11 220 823	349 006 607	9 976 434
1961	8 870 402	275 900 342	8 361 240
1962	9 383 445	291 857 763	10 931 713
1963	9 601 621	298 643 796	13 288 643
1964	9 929 858	308 853 107	13 901 801
1965	10 822 213	336 608 450	15 151 098
1966	10 900 204	339 034 242	15 249 385
1967	14 309 391	445 071 810	24 783 864
1968	21 844 592	679 442 760	50 526 541
1969	22 260 439	692 377 047	42 962 647
1970	19 876 430	618 226 079	36 771 396
1971	18 681 633	581 063 738	29 143 347
1972	19 587 694	609 243 385	32 711 449
1973	19 617 406	610 169 532	49 553 568
1974	17 852 419	555 272 300	82 638 847
1975	14 908 138	463 694 924	67 176 070
1976	16 317 178	507 521 000[a]	70 131 231
1977	16 857 392	524 324 000	82 938 369
1978	14 245 058	443 071 000	87 906 253
1979[b]	13 246 000	412 000 000	171 832 000

[a] Beginning in 1976 volume for silver was given in EMR listing in kilograms. The figures given here are converted to grams to be consistent with the rest of the series.

[b] Beginning in 1979, the reporting base was changed to the nearest thousand.

SILVER: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1898-1958

Year	Volume of Production (Troy Ounces)	Volume of Production (Grams)	Value of Production (Dollars)
1898	85 000	2 643 795	49 521
1899	202 000	6 282 902	120 352
1900	161 650	5 027 877	99 140
1901	151 400	4 709 066	89 250
1902	145 000	4 510 004	75 632
1903	17 777	552 926	9 502
1904	206 875	6 434 531	118 376
1905	2 451 356	76 245 694	1 479 442
1906	5 401 766	168 013 703	3 607 894
1907	9 982 363	310 486 195	6 521 178
1908	19 398 545	603 362 194	10 254 847
1909	24 822 099	772 053 580	12 784 126
1910	30 366 366	944 499 560	16 241 755
1911	30 540 754	949 923 633	16 279 443
1912	29 214 025	908 657 748	17 772 352
1913	28 411 261	883 688 997	16 987 377
1914	25 139 214	781 916 959	13 779 055
1915	22 748 609	707 560 832	11 302 419
1916	21 608 158	672 088 841	14 188 133
1917	19 301 835	600 354 177	15 714 975
1918	17 198 737	534 940 517	16 643 562
1919	12 117 878	376 908 137	13 465 628
1920	9 907 626	308 161 615	9 996 795
1921	9 761 607	303 619 916	6 116 037
1922	10 811 903	336 287 774	7 300 305
1923	10 540 943	327 859 976	6 838 226
1924	11 272 567	350 616 026	7 527 933
1925	10 529 131	327 492 581	7 271 944
1926	9 274 965	288 483 658	5 760 402
1927	9 307 953	289 509 700	5 246 893
1928	7 242 601	225 270 072	4 213 456
1929	8 890 726	276 532 489	4 711 462
1930	10 205 683	317 432 224	3 893 876
1931	7 438 951	231 377 239	2 222 014
1932	6 335 788	197 065 035	2 006 648
1933	4 535 680	141 075 417	1 715 975
1934	5 321 160	165 506 576	2 525 470
1935	5 161 651	160 545 292	3 344 229
1936	5 219 366	162 340 429	2 355 343
1937	4 693 047	145 970 078	2 106 286
1938	4 318 837	134 330 846	1 877 701
1939	4 689 422	145 857 328	1 898 653
1940	5 563 101	173 031 782	2 127 831
1941	4 977 476	154 816 809	1 904 432
1942	4 452 787	138 497 157	1 877 562
1943	2 671 320	83 087 339	1 208 879
1944	3 143 275	97 766 781	1 351 608
1945	3 185 369	99 076 050	1 497 123
1946	2 485 215	77 298 827	2 078 882
1947	2 342 032	72 845 337	1 686 263
1948	3 210 107	99 845 488	2 407 580
1949	2 562 859	79 713 825	1 902 923
1950	4 408 620	137 123 409	3 563 047
1951	4 520 094	140 590 638	4 273 749
1952	6 491 124	201 896 524	5 421 387
1953	5 154 619	160 326 572	4 330 395
1954	5 443 721	169 318 649	4 532 278
1955	6 051 017	188 207 666	5 335 787
1956	6 626 447	206 105 540	5 942 597
1957	6 910 130	214 929 068	6 037 381
1958	9 815 257	305 288 618	8 520 624

TELLURIUM

METHODS

Tellurium is recovered as a by-product in the refining of copper from copper-sulphide ores. In Ontario, tellurium is recovered at Inco's Copper Cliff refinery. Production is the quantities reported by the company, and is valued at the average London price for the metal (1934-44) and at the average New York price (1945-79). (Corrected series)

TELLURIUM: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1934-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1934	5 130	2 326	25 599
1935	14 275	6 475	28 550
1936	10 197	4 625	18 049
1937	6 651	3 016	11 506
1938	0	0	0
1939	0	0	0
1940	3 491	1 583	5 607
1941	11 453	5 195	18 394
1942	9 500	4 309	15 200
1943	8 600	3 901	15 050
1944	9 900	4 491	17 325
1945	0	0	0
1946	14 200	6 441	21 868
1947	6 169	2 798	10 796
1948	8 739	3 964	15 293
1949	8 726	3 958	15 707
1950	6 010	2 726	11 419
1951	6 301	2 858	11 594
1952	5 710	2 590	9 707
1953	4 525	2 052	7 919
1954	7 195	3 264	12 591
1955	6 455	2 928	11 296
1956	6 305	2 860	11 034
1957	6 915	3 137	12 101
1958	6 692	3 035	11 376
1959	6 900	3 130	14 835
1960	7 450	3 379	2 6075
1961	8 050	3 651	39 043
1962	7 011	3 180	42 066
1963	7 705	3 495	50 082
1964	7 900	3 583	51 350
1965	9 315	4 225	60 548
1966	9 000	4 082	58 500
1967	6 500	2 948	42 250
1968	6 600	2 994	42 636
1969	5 610	2 545	36 241
1970	7 325	3 323	45 928
1971	8 100	3 674	49 086
1972	8 327	3 777	49 462
1973	15 346	6 961	93 150
1974	19 468	8 830	158 080
1975	15 286	6 934	144 505
1976	15 500	7 031	157 945
1977	17 802	8 075	325 367
1978	11 700	5 307	266 912
1979	7 000	3 175	162 000

THORIUM

METHODS

Production figures show the thorium content of the salts shipped, valued at the sum reported by the producer.

Statistics Canada sources indicate that the data are not available for the years 1962 to 1965. Both the quantity and value of production data are published, however, in the Department of Mines, Annual Report 76 (1966), p. 4. Otherwise, the Ontario Ministry and Statistics Canada figures agree.

THORIUM: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1959-1969

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1959	47 447	21 521	105 676
1960	a	a	a
1961	a	a	a
1962	31 939	14 487	120 384
1963	77 539	35 171	464 154
1964	97 892	44 403	371 519
1965	46 339	21 019	188 865
1966	87 393	39 640	210 528
1967	117 383	53 244	214 597
1968	139 191	63 135	261 836
1969[b]	29 014	13 160	55 087

[a]The data for 1960 and 1961 are confidential.
[b]There was only one producer of thorium. Production stopped in 1968, although some shipments were made in 1969. No production was reported since 1969.

TIN

METHODS

The first year of reported tin production in the province is 1974. Production is tin in concentrates recovered as a by-product of base metal mining, and is valued as reported by the producer. Valuation is based on the price per pound of tin in the concentrate, with no deductions for smelting charges.

TIN: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1974-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1974	399 358	181 145	1 397 815
1975	632 546	286 918	2 165 533
1976	379 574	172 172	1 168 832
1977	309 763	140 506	1 633 889
1978	217 252	98 544	1 423 708
1979[a]	212 000	96 000	1 746 000

[a]Beginning in 1979, the reporting base was changed to the nearest thousand.

TUNGSTEN

METHODS

The production of tungsten in Ontario took place intermittently between 1940 and 1953. Tungsten, as oxide in concentrates, was a product of gold mining operations. For the 1940s, production is recorded as shipments of tungsten concentrates, and for 1950-53 output is the tungsten oxide content of tungsten concentrates shipped.

Until 1943, when production ceased on instructions from the Metals Controller, Ottawa, all tungsten concentrates were sold through the Metals Controller at $26.50 per short ton unit (20 pounds) of tungsten oxide for concentrates containing 70 percent tungsten oxide, delivered at Welland. (D.B.S. Annual Report on the Mineral Production of Canada, 1944 (26-201), p. 173. See also, Ontario, Department of Mines, Geology and Ore Deposits of Tisdale Township, by S.A. Ferguson, Geological Report 58 (Toronto, 1968) p. 160.) The same pricing basis applies to shipments for 1944 and 1945, although assigned unit values are lower. For 1950-53 production is valued at the average New York price translated into Canadian dollars.

Although the Ontario Ministry of Natural Resources and Statistics Canada methods are identical, there is one year (1943) when the estimates are different for the volume of production. In that year the Statistics Canada estimate is 494,405 pounds of concentrates shipped. The estimate of the value of the product is the same in both data sources, however.

TUNGSTEN: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1940-1953

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1940	1 064	482	690
1941	3 830	1 737	2 432
1942	162 185	73 565	145 241
1943	269 039	122 034	356 478
1944	63 152	28 645	5 212
1945	787	356	714
1946	0	0	0
1947	0	0	0
1948	0	0	0
1949	0	0	0
1950	0	0	0
1951	0	0	0
1952	50 734	23 012	164 886
1953	48 780	22 126	132 685

URANIUM

METHODS

The output figures are the uranium oxide content of uranium precipitates or concentrates shipped from the mine, valued at the sum received by the producer.

URANIUM: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1955-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production (Dollars)
1955	a	a	487 054
1956	906 614	411 233	9 361 867
1957	7 970 598	3 615 402	82 940 763
1958	19 970 136	9 058 301	10 149 700
1959	25 492 171	11 563 054	68 529 993
1960	19 793 727	8 978 283	11 983 533
1961	14 970 593	6 790 546	51 060 610
1962	12 805 203	5 808 342	18 283 081
1963	12 770 421	5 792 565	02 951 146
1964	11 805 143	5 354 722	63 606 944
1965	6 825 046	3 095 788	47 234 892
1966	5 875 698	2 665 171	42 758 135
1967	5 450 639	2 472 368	41 418 268
1968	5 361 460	2 431 917	39 163 777
1969	a	a	40 307 489
1970	6 676 841	3 028 564	b
1971	7 009 985	3 179 675	b
1972	8 428 053	3 822 900	b
1973	8 114 567	3 680 705	b
1974	8 442 966	3 829 664	b
1975	10 569 539	4 794 262	b
1976	9 789 981	4 440 661	186 438 898
1977	9 431 669	9 431 669	250 688 679
1978	9 820 853	4 454 664	363 844 834
1979[c]	8 829 000	4 005 000	375 793 000

[a]Volume of production figures for 1955 and 1969 are confidential.
[b]Value of production is confidential for 1970-75.
[c]Beginning in 1979, the reporting base was changed to the nearest thousand.

YTTRIUM

METHODS

No information is available on the methods of calculating the volume and value of production. It is probable, though, that production is the yttrium content of shipments, and valued at the sum reported by the producer.

YTTRIUM: VOLUME AND VALUE OF PRODUCTION, MNR AND SC SERIES, 1966-1979

Year	Volume of Production (Pounds)	Volume of Production (Kilograms)	Value of Production[a] (Dollars)
1966	20 724	9 400	130 223
1967	172 551	78 267	1 594 298
1968	113 330	51 405	936 067
1969	85 443	38 756	671 500
1970	a	a	a
1971	a	a	a
1972	a	a	a
1973	a	a	a
1974	a	a	a
1975	a	a	a
1976	a	a	a
1977	a	a	a
1978	a	a	a
1979	a	a	a

[a]The data for 1970 to 1979 are not available.

ZINC

METHODS

Volume of Production

In the years before 1916, Statistics Canada estimates of production are based on the estimated zinc content of ores or concentrates shipped (1899-1904) and the quantity of ore or concentrates shipped (1905-15). Beginning in 1916, production is based on estimated recoverable zinc from concentrates shipped. In 1972, the figures were extended to include refined zinc produced by Texasgulf's zinc refinery in Timmins. Beginning in 1975, the recoverable zinc in ores and concentrates shipped was confined to metal paid for.

The General Review of the Mining Industry, 1950 (26-201) states that 'recoverable zinc is computed as the total zinc content, less 160 pounds of zinc per ton of concentrates, as an allowance for smelter losses.' (p.A.-38.) The allowance for smelter losses was changed to ten percent of content in 1972 (S.C., General Review of the Mineral Industries, 1972 (26-201), p. 49).

Statistics Canada methods were not published for 1951 to 1958. It is assumed that the methods used for 1950 applied to these years in computing the volume of production.

The methods of the Ontario Ministry of Natural Resources have been the same as those of Statistics Canada since 1921. Production is for ore shipped from 1899-1918, and in 1919 it is the estimated zinc metal recovered from concentrates refined in the United States.

Value of Production

Statistics Canada methods of valuation are as follows:

1899-1915: shipping values;
1916-19: average New York price of spelter (zinc);
1920-25: average St. Louis price for refined zinc;
1926-39: average London price, expressed in Canadian dollars;
1940-46: average London price in Canadian dollars, but the average price used was that agreed upon by contract between Canadian producers and the British government;
1947-50: average New York price translated into Canadian dollars;
1951-79: average Montreal price.

Valuation methods used by the Ontario Ministry of Natural Resources are the same as those of Statistics Canada from 1921 to 1975. Between 1899 and 1918, the production of zinc ore shipped was valued at the sum reported by the shipper; the zinc metal recovered from concentrates in 1919 was valued as reported by the refinery.

Although the methods used for valuing production for 1951 to 1958 were not published, a secondary source indicates that after 1926 the markets on which the prices for zinc are based are the same as for lead. (See M.C. Urquhart and K.A.H. Buckley (Eds.), Historical Statistics of Canada (Toronto: The Macmillan Company of Canada Limited, 1965), p. 409.)

DATA SELECTION

Along with the Statistical Files data, Statistics Canada figures are presented for the years up to and including 1925. For the years to 1910, production in the Ontario Ministry's series is reported in tons of ore, whereas the Statistics Canada data are recorded as pounds of zinc contained in ores or concentrates (1899-1904) and as tons of ore or concentrates (1905-15). After 1925 there is only one year in which Ontario Ministry of Natural Resources and Statistics Canada figures disagree; that year is 1972, when the Statistics Canada figures are 806,782,141 pounds valued at $153,861,352. The Statistics Canada figures were not revised.

ZINC: VOLUME AND VALUE OF PRODUCTION, MNR SERIES, 1899-1979

Year	Volume of Production (Pounds[a])	Volume of Production (Kilograms[b])	Value of Production (Dollars)
1899	1 200	1 089	24 000
1900	500	454	500
1901	1 500	1 361	15 000
1902	950	862	11 500
1903	1 150	1 043	17 000
1904	533	484	3 700
1905	0	0	0
1906	400	363	6 000
1907	0	0	0
1908	0	0	0
1909	895	812	8 950
1910	576	523	5 760
1911	0	0	0
1912	0	0	0
1913	0	0	0
1914	0	0	0
1915	0	0	0
1916	0	0	0
1917	0	0	0
1918	0	0	0
1919	0	0	0
1920	0	0	0
1921	0	0	0
1922[c]	100 283	45 487	2 180
1923	0	0	0
1924	0	0	0
1925	179 545	81 440	13 685
1926	0	0	0
1927	0	0	0
1928	58 724	26 636	3 226
1929	5 516 806	2 502 381	297 190
1930	3 527 894	1 600 225	127 004
1931	0	0	0
1932	0	0	0
1933	0	0	0
1934	0	0	0
1935	0	0	0
1936	0	0	0
1937	120 011	54 436	5 833
1938	0	0	0
1939	0	0	0
1940	0	0	0
1941	1 100 949	499 382	37 553
1942	4 710 394	2 136 598	160 671
1943	3 299 812	1 496 769	131 992
1944	2 429 176	1 101 855	104 455
1945	237 799	107 863	15 314
1946	42 628	19 335	3 329
1947	0	0	0
1948	0	0	0
1949	0	0	0
1950	0	0	0
1951	0	0	0
1952	744 920	337 890	130 630
1953	171 787	77 921	20 546
1954	1 420 048	644 122	170 122
1955	3 095 640	1 404 158	422 555
1956	2 454 297	1 113 250	364 218
1957	22 591 677	10 247 412	2 731 334
1958	92 478 339	41 947 468	10 061 643
1959	89 963 215	40 806 627	11 011 498
1960	90 459 368	41 031 679	12 076 326
1961	103 874 146	47 116 520	13 077 755
1962	126 264 684	57 272 697	15 278 027
1963	132 939 970	60 300 556	16 989 728
1964	144 152 666	65 386 549	20 426 433
1965	121 349 121	55 043 035	18 323 817
1966	164 789 837	74 747 412	24 883 265
1967	537 064 861	243 608 523	77 820 698
1968	693 515 176	314 573 192	97 785 640
1969	720 571 567	326 845 764	109 743 049
1970	680 484 067	308 662 380	108 401 112
1971	731 450 664	331 780 440	122 371 696
1972	807 219 666	366 148 681	153 944 862
1973	912 729 270	414 007 032	220 387 609
1974	960 117 440	435 501 945	335 080 986
1975	740 427 997	335 852 489	277 660 498
1976	699 292 826	317 193 180	263 101 933
1977	651 288 737	295 419 602	231 409 401
1978	608 260 623	275 906 460	211 416 273
1979[d]	637 923 000	289 357 000	278 881 000

[a]1899-1910; short tons of ore.
[b]1899-1910: tonnes of ore.
[c]Estimated zinc recovered from concentrates shipped in 1919, and not previously reported.
[d]Beginning in 1979, the reporting base was changed to the nearest thousand.

ZINC: VOLUME AND VALUE OF PRODUCTION, SC SERIES, 1899-1925

Year	Volume of Production (Pounds[a])	Volume of Production (Kilograms[b])	Value of Production (Dollars)
1899	814 000	369 224	46 805
1900	190 400	86 363	8 359
1901	0	0	0
1902	142 200	64 500	6 882
1903	900 000	408 233	48 600
1904	477 568	216 621	24 350
1905	0	0	0
1906	500	454	6 700
1907	217	197	3 000
1908	452	410	3 215
1909	895	812	8 950
1910	576	523	5 760
1911	0	0	0
1912	10	9	375
1913	0	0	0
1914	0	0	0
1915	0	0	0
1916	0	0	0
1917	0	0	0
1918	0	0	0
1919	147 692	66 991	10 838
1920	13 950	6 327	1 070
1921	0	0	0
1922	0	0	0
1923	0	0	0
1924	0	0	0
1925	179 545	81 440	13 685

[a]1905-15: short tons of ore or concentrates.
[b]1905-15: tonnes of ore or concentrates.

ORE HOISTED

SOURCE

Information Systems Division, Mineral Policy Sector, Energy, Mines and Resources.

NOTE

Ore hoisted series are given for Total Metal Mines, gold, iron, and other metals. The series for 'Other Metals' is obtained as a residual by subtracting the sum of gold and iron from the total metals hoisted. 'Other metals' includes copper, gold, silver, nickel-copper, silver-cobalt, silver-lead-zinc, uranium and miscellaneous metal mines. A check on the residual method was made by adding the ore hoisted estimates for the individual metals included in the 'other' category. In all cases, the residual approach and the direct approach gave the same results.

The series for ore hoisted are included as additions to the output part of this volume. The employment figures which match these ore hoisted figures can be found in the input tables.

ORE HOISTED METALS, 1945-1979
(Short tons)

Year	Total Metal Mines	Gold	Iron Ore	Other Metals
1945	18 837 219	6 357 340	1 494 625	10 985 254
1946	17 750 814	7 457 567	2 035 955	8 257 292
1947	21 081 485	7 823 580	2 109 724	11 148 181
1948	22 206 811	8 694 110	1 812 141	11 700 560
1949	23 643 995	10 056 475	2 605 410	10 982 110
1950	24 440 998	10 432 315	3 160 537	10 848 146
1951	26 303 666	10 211 339	3 075 880	13 016 447
1952	27 902 942	10 032 125	3 241 859	14 628 958
1953	27 733 717	8 708 635	3 731 269	15 293 813
1954	29 091 197	9 377 299	3 159 148	16 554 750
1955	29 345 211	9 649 697	5 276 627	14 418 887
1956	34 633 888	9 021 520	6 858 730	18 753 638
1957	39 435 732	9 055 062	6 999 493	23 381 177
1958	39 755 409	9 373 089	5 976 612	24 405 708
1959	51 185 082	9 327 102	9 693 716	32 164 464
1960	51 727 173	9 460 386	10 345 455	31 921 332
1961	46 045 234	9 076 759	8 850 778	28 117 697
1962	42 083 275	8 519 112	9 932 313	23 631 850
1963	39 019 118	7 966 274	8 273 892	22 778 952
1964	42 410 574	7 705 869	10 960 056	23 744 649
1965	48 286 635	7 362 347	14 864 470	26 059 818
1966	45 130 805	6 512 674	14 288 391	24 329 740
1967	51 858 121	5 964 943	15 566 089	30 327 089
1968	61 972 843	5 361 880	21 093 969	35 516 994
1969	53 481 970	5 079 030	21 036 762	27 366 178
1970	67 151 119	4 246 951	24 514 488	38 389 680
1971	65 517 075	4 156 429	23 499 215	37 861 431
1972	60 401 933	3 748 807	25 520 790	31 132 336
1973	62 047 105	3 693 231	27 017 161	31 336 713
1974	62 608 111	3 547 826	25 629 483	33 430 802
1975	57 908 771	3 557 108	23 681 088	30 670 575
1976	61 360 172	3 314 989	26 568 677	31 476 486
1977	59 852 221	3 451 333	25 015 622	31 385 266
1978	54 748 778	3 457 623	27 909 084	23 382 071
1979	46 459 765	3 108 815	21 315 953	22 034 997

ORE HOISTED METALS, 1945-1979
(Tonnes)

Year	Total Metal Mines	Gold	Iron Ore	Other Metals
1945	17,085,358	5,766,107	1,355,625	9,963,625
1946	16,099,988	6,764,013	1,846,611	7,489,364
1947	19,120,907	7,095,987	1,913,520	10,111,400
1948	20,141,578	7,885,558	1,643,612	10,612,408
1949	21,445,103	9,121,223	2,363,107	9,960,774
1950	22,167,985	9,462,110	2,866,607	9,839,268
1951	23,857,425	9,261,684	2,789,823	11,805,917
1952	25,307,968	9,099,137	2,940,366	13,268,465
1953	25,154,481	7,898,732	3,384,261	13,871,488
1954	26,385,716	8,505,210	2,865,347	15,015,158
1955	26,616,106	8,752,275	4,785,901	13,077,931
1956	31,412,936	8 182 519	6,220,868	17 009 550
1957	35,768,209	8 212 941	6,348,540	21 206 728
1958	36,058,156	8,501,392	5,420,787	22,135,977
1959	46,424,869	8,459,682	8,792,200	29,173,169
1960	46,916,546	8,580,570	9,383,328	28,952,648
1961	41 763 027	8 232 620	8 027 656	25 502 751
1962	38,169,530	7,726,835	9,008,608	21,434,088
1963	35,390,340	7,225,411	7,504,420	20,660,509
1964	38,466,391	6,989,223	9,940,771	21,536,397
1965	43,795,978	6,677,649	13,482,074	23,636,255
1966	40,933,640	5,906,995	12,959,571	22,067,074
1967	47,035,316	5,410,203	14,118,443	27,506,670
1968	56,209,369	4,863,225	19,132,230	32,213,914
1969	48,508,147	4,606,680	19,080,343	24,821,123
1970	60,906,065	3,851,985	22,234,641	34,819,440
1971	59,423,987	3,769,881	21,313,788	34,340,318
1972	54,784,553	3,400,168	23,147,357	28,237,029
1973	56,276,724	3,349,761	24,504,565	28,422,399
1974	56,785,557	3,217,878	23,245,941	30,321,737
1975	52,523,255	3,226,297	21,478,747	27,818,212
1976	55,653,676	3,006,695	24,097,790	28,549,173
1977	54,285,964	3,130,359	22,689,169	28,466,436
1978	49,657,142	3,136,064	25,313,539	21,207,538
1979	42,139,007	2,819,695	19,333,569	19,985,742

GENERAL NOTES ON PRINCIPAL INPUT STATISTICS

The principal statistics data for the metal mining industries and the nonferrous smelting and refining industry provide an array of information on inputs, including a variety of series on labour and costs of fuel, electricity and materials. In addition, the principal statistics provide data on the gross value of production and value added.

This section is made up of two groups of data. The first group deals with total metal mines as well as gold, iron, and other metal mining industries and includes milling activities. The time period covered is 1945 to 1977.

In the first volume input series covered the years 1964 to 1975. The present volume extends the original series back to 1961 and forward to 1977. To extend the input data to earlier years new series covering the period 1945 to 1961 have been constructed. The new and the original series, along with their respective notes, are shown separately since the conceptual bases on which they were gathered are different. The notes and data for the 1945 to 1961 period follow the 1961 to 1977 series.

The second group covers the nonferrous smelting and refining industries. The time period covered for smelting and refining is much longer than that shown for the first group. Therefore, as in the case of the first group, inconsistencies in methodological methods of data collection arise. The changes are identified in the set of explanatory notes that immediately precede the smelting and refining series.

The principal inputs data are from Statistics Canada sources and from Information Systems Division, Mineral Policy Sector, Energy, Mines and Resources. Details immediately precede each set of data.

INPUT STATISTICS, 1961-1977

SOURCES

Principal statistics by mining industry are not published on a provincial basis. The data in this section were obtained from the Minerals Unit, Manufacturing and Primary Industries Division, Statistics Canada.

INDUSTRY CLASSIFICATIONS

The mining (including milling) industries are defined according to the 1960 Standard Industrial Classification (Statistics Canada, 12-501). The industry definitions are as follows, with SIC numbers in brackets:

i total metal mining (05)
ii gold mining includes gold quartz mines (052);
iii iron mining includes iron mines (058);
iv other metal mining includes copper-gold-silver mines (053), nickel-copper mines (054), silver-cobalt mines (055), silver-lead-zinc mines (056), uranium mines (057), and all other metal mines (059).

CONCEPTS AND DEFINITIONS

The concepts and definitions described below apply to the metal mining industries. These explanatory notes are based on those contained in D.B.S., Miscellaneous Metal Mines, 1964 (26-219), and which are also reproduced in Gold Mining Industry, 1964 (26-209), Iron Mines, 1964 (26-210), Nickel-Copper Mines, 1964 (26-211), and Silver-Lead-Zinc Mines, 1964 (26-216).

Mining Activity and Total Activity

The data series distinguish between mining activity and total activity. The mining activity concept relates to activities directly associated with the production and marketing of mineral products. The series included under mining activity are: numbers, man-hours paid, and wages, for production and related workers; cost of fuel and electricity; cost of materials and supplies; value of production, mining activity; and value added, mining activity.

Total activity comprises mining and non-mining activities. Non-mining activities include shipments of goods not of own manufacture and other revenue-producing activities.

Shipments of goods not of own manufacture include goods sold in much the same condition as purchased or received.

Other revenue represents the book value of fixed assets produced during the year for use of reporting establishments by the establishment's own employees and for which depreciation accounts are maintained. Also included are revenues from the sale of electricity, servicing revenues, commissions on sales (when not included in value of sales), revenue for company-operated cafeterias and lunch counters and revenue from outside installation or construction work not related to the establishment's own products, sale of used materials, research and development work, and so on. Other revenue does not include non-operating revenue such as rent, dividends and interest.

The tables contain three series for total activity: number of employees, salaries and wages, and value added.

Establishment

The establishment is the reporting unit from which industry principal statistics are derived. A metal mining establishment is a mine or a mine-mill principally engaged in commercial mining activities. In order to qualify as an operating mining entity, the mine (or mine-mill) must be able to report all of the following principal statistics: number of employees and wages and salaries; man-hours worked and paid; fuel and power consumed; materials and supplies used; goods purchased for resale as such; inventories; and shipments or sales.

The number of establishments represents the number of operating units that are principally engaged in the mining industries to which they have been classified.

Production and Related Workers

These include workers engaged directly in mining production activities, and those employed in storing, inspecting, handling, packing, warehousing, and so on. They also include employees engaged in maintenance, repair, janitorial and watchman services, and line supervisors (working foremen) engaged in work similar to that of the employees they supervise.

Production and Related Workers: Number

The number of workers is an average for the year. This is calculated by summing the monthly figures of those receiving pay during the last

pay period of each month and dividing by twelve. This procedure is followed even if an establishment did not operate in all months, in order to arrive at equivalent annual full-time employment.

Production and Related Workers: Man-Hours Paid

Man-hours represent total man-hours paid. Total hours paid include total hours at work during the calendar year plus hours not worked but paid for, such as paid vacations, sick leave, and statutory holidays. Overtime hours are also included, but only hours actually at work.

Wages, and Salaries and Wages

Wages, and salaries and wages, refer to gross earnings of employees before deductions for income tax and employee contributions to social benefits such as sickness, accident, unemployment insurance, and pensions. They include all salaries, wages, bonuses, profits shared with employees, the value of room and board where provided, commissions paid to regular employees, as well as any other allowance forming part of the worker's earnings. Payments for overtime are also included.

Cost of Fuel and Electricity

These figures refer to amounts actually used. Any electricity produced by establishments for own use is not included in the total cost. The values represent the laid-down cost at the establishment including freight and duty. The figure for fuel and electricity used in mining activity also includes relatively small amounts used in non-mining activities.

Cost of Materials and Supplies

These figures represent the laid-down cost at the establishment of materials, supplies and purchased components owned and used during the year in mining activities and related processes. These include only commodity items or physical goods either purchased from others or received as transfers from other establishments of the reporting company. Maintenance and repair supplies not chargeable to fixed assets accounts and any amounts charged by other establishments for work done on materials owned by the reporting establishment are included. Cost of repairs or maintenance done by outside contractors and cost of returnable containers are not included.

Value of Production, Mining Activity

These figures represent the Canadian dollar value of products shipped by the reporting establish ments adjusted by changes in value between closing and opening inventory values of goods-in-process and finished products on hand. Revenues from repairs and custom work performed for other establishments and the cost of any goods produced by the mining establishment and shipped on a rental basis are also included. All products and by-products of own production shipped from the establishment are covered, including transfer shipments to sales outlets, distributing warehouses or to other processing plants of the reporting firm, when such units are treated as separate establishments.

Production values are net of returned goods, discounts, returns, allowances, sales tax, excise taxes and duties, returnable containers and charges for outward transportation by common or contract carriers. Transportation or delivery expense incurred by the reporting establishment's own carriers are included.

Value Added, Mining Activity

Value added is computed by deducting the cost of fuel and electricity and the cost of materials and supplies from the value of production.

Number of Employees

Total employees encompass production and related workers in both mining and non-mining activities, administrative and office employees, and sales and distribution personnel. The total includes employees located at head offices and auxiliary units but associated with the reporting establishment. The figures for production and related workers in mining and non-mining activities, administrative and office employees, and sales and distribution personnel are annual averages and represent as closely as possible full-time employment.

Value Added, Total Activity

Value added for total activity is the sum of value added for mining activity and value added for non-mining activity. Value added for non-mining activity is compiled by deducting the cost of goods purchased for re-sale (adjusted for changes in the value of inventories of goods purchased for re-sale) and the cost of non-mining materials and supplies used from the value of shipments of goods not of own manufacture, plus other revenue.

In some cases, total value added may be less than value added for mining activity as a result of expenditures associated with non-mining activities exceeding revenues from such activities, or because of a decrease in inventory of goods not of own manufacture exceeding the mark-up on the sale of such goods.

TOTAL METALS: INPUT STATISTICS, 1961-1977
(Mining Activity)

Year	Number of Establishments	Production and Related Workers		
		Number	Man-Hours	Wages ($)
1961	59	27 358	55 231 591	131 061 052
1962	62	25 815	52 296 751	125 563 374
1963	61	23 495	50 024 769	114 668 739
1964	64	23 466	49 906 356	117 258 796
1965	65	23 850	47 335 222	124 420 945
1966	63	23 683	47 503 280	129 761 793
1967	58	23 247	48 563 057	147 824 222
1968	61	23 924	50 968 500	164 451 946
1969	56	20 428	41 486 016	141 967 210
1970	52	23 312	49 078 945	190 262 098
1971	46	23 860	47 693 585	202 152 483
1972	40	21 556	43 064 086	198 092 199
1973	31	20 881	41 256 823	202 670 493
1974	36	21 487	42 764 076	221 851 168
1975	37	22 093	43 595 180	275 865 790
1976[a]	34	22 575	44 705 000	316 724 000
1977[a]	32	22 552	44 919 000	342 551 000

TOTAL METALS: INPUT STATISTICS, 1961-1977 (Cont'd)
(Mining Activity, Dollars))

Year	Cost of Fuel and Electricity	Cost of Materials and Supplies	Value of Production	Value Added
1961	15 535 469	199 213 872	715 024 284	500 274 943
1962	15 359 218	194 631 643	665 181 181	455 190 320
1963	14 976 772	190 486 429	647 597 969	442 134 768
1964	15 559 685	202 747 775	704 953 783	486 646 323
1965	16 268 023	242 715 412	751 493 085	492 509 650
1966	13 778 361	252 783 612	708 914 593	439 452 620
1967	12 884 979	338 020 566	938 703 174	581 486 520
1968	23 587 028	372 188 050	1 051 804 729	656 029 561
1969	26 575 368	376 855 614	985 408 592	581 977 610
1970	30 087 392	507 270 271	1 302 827 891	765 470 228
1971	33 547 082	524 248 559	1 192 448 519	634 652 878
1972	34 771 736	443 028 983	1 191 182 779	713 331 060
1973	37 778 398	529 978 665	1 663 871 532	1 096 114 519
1974	49 764 411	630 463 817	2 180 495 762	1 500 267 534
1975	60 003 259	674 448 349	1 939 281 690	1 204 830 082
1976[a]	77 191 000	754 089 000	2 133 792 000	1 302 512 000
1977[a]	92 566 000	790 197 000	2 119 243 000	1 236 480 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of establishments and number of workers

TOTAL METALS: INPUT STATISTICS, 1961-1977
(Total Activity)

Year	Number of Employees	Salaries and Wages ($)	Value Added ($)
1961	31 505	159 461 664	503 523 316
1962	29 963	154 728 192	458 140 988
1963	27 647	144 291 746	447 478 862
1964	27 561	147 379 678	490 803 064
1965	28 090	156 344 432	498 597 678
1966	18 050	164 544 421	443 983 861
1967	28 131	189 245 830	593 222 394
1968	28 458	204 728 676	659 850 702
1969	24 728	187 790 047	585 115 728
1970	29 637	256 286 112	770 616 670
1971	29 880	275 767 192	639 881 099
1972	27 469	274 518 966	725 389 832
1973	27 147	303 200 296	1 106 030 369
1974	29 036	335 929 593	1 521 123 899
1975	28 671	388 496 490	1 224 176 820
1976[a]	29 054	441 555 000	1 309 222 000
1977[a]	29 178	478 453 000	1 255 478 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of employees.

GOLD MINING: INPUT STATISTICS, 1961-1977
(Mining Activity)

Year	Number of Establishments	Production and Related Workers		
		Number	Man-Hours Paid	Wages (Dollars)
1961	30	9 946	21 427 283	38 214 591
1962	29	9 487	20 746 982	37 366 226
1963	29	9 048	20 267 116	36 411 907
1964	28	8 404	19 126 708	35 398 876
1965	31	7 586	15 872 434	32 572 873
1966	28	6 634	13 933 645	31 007 577
1967	22	5 767	11 769 973	27 802 392
1968	24	5 014	10 101 428	25 383 480
1969	20	4 526	9 127 331	23 830 063
1970	16	3 969	7 948 469	22 264 144
1971	14	3 510	7 133 667	20 762 330
1972	12	3 111	6 339 578	20 593 603
1973	10	3 133	6 154 042	22 818 104
1974	10	3 067	6 228 361	28 145 653
1975	12	3 187	6 353 042	35 206 216
1976[a]	10	2 624	5 177 000	32 904 000
1977[a]	8	2 288	4 875 000	32 994 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of establishments and number of workers.

GOLD MINING: INPUT STATISTICS, 1961-1977 (Cont'd)
(Mining Activity, Dollars)

Year	Cost of Fuel and Electricity	Cost of Materials & Supplies	Value of Production[b]	Value Added
1961	4 612 893	21 971 495	101 266 315	74 681 927
1962	4 620 760	23 918 169	101 338 972	72 800 043
1963	4 398 649	22 868 703	99 268 391	72 001 039
1964	4 367 662	22 986 697	95 340 152	67 985 793
1965	4 256 511	22 731 903	88 651 467	61 663 053
1966	3 694 501	20 280 212	81 887 924	57 913 211
1967	3 412 724	16 487 312	73 187 720	53 287 684
1968	3 054 703	14 915 415	65 817 453	47 847 335
1969	3 145 150	14 318 300	62 855 019	45 391 569
1970	3 179 089	12 980 165	55 834 400	39 675 146
1971	3 027 760	13 883 976	54 081 393	37 169 657
1972	2 798 059	12 106 171	59 764 121	44 859 891
1973	3 120 297	18 062 777	93 724 666	72 541 592
1974	3 556 605	21 516 218	126 752 141	101 679 318
1975	4 131 541	25 136 262	116 449 743	87 181 670
1976[a]	4 191 000	23 215 000	90 524 000	63 118 000
1977[a]	5 034 000	26 515 000	116 379 000	84 830 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of establishments, and number of workers.

[b]This differs from the value of gold production in the table on gold production (p. 23) because the production of gold producers are different and because gold mines may produce revenue-yielding by-products. First, production figures in the table on gold production include gold produced by gold mines and by base metal mines, whereas the value of production data in this table only apply to gold mines. Second, gold mines may produce byproducts, such as silver and copper. Thus the value of production of gold mines includes all products not just the production of gold.

GOLD MINING: INPUT STATISTICS, 1961-1977
(Total Activity)

Year	Number of Employees	Salaries and Wages (Dollars)	Value Added (Dollars)
1961	11 407	46 713 807	75 439 490
1962	10 962	46 078 414	73 648 507
1963	10 432	44 519 165	73 103 854
1964	9 751	43 643 461	68 986 027
1965	8 828	40 498 545	62 809 259
1966	7 695	37 817 983	58 281 543
1967	6 749	34 200 683	53 537 620
1968	5 868	31 595 972	48 154 541
1969	5 306	29 746 156	45 667 075
1970	4 659	28 159 407	39 889 019
1971	4 183	26 182 087	37 286 923
1972	3 715	25 701 344	45 099 596
1973	3 722	28 281 280	72 780 407
1974	3 666	35 000 781	102 032 398
1975	3 770	43 588 148	87 226 268
1976[a]	3 106	40 183 000	62 959 000
1977[a]	2 735	40 529 000	84 727 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of employees.

IRON MINING: INPUT STATISTICS, 1961-1977
(Mining Activity)

Year	Number of Establishments	Production and Related Workers		
		Number	Man-Hours Paid	Wages (Dollars)
1961	5	1 852	3 543 949	10 031 778
1962	6	1 806	3 459 882	10 226 805
1963	5	1 634	3 447 705	9 567 387
1964	6	1 849	3 967 093	11 193 545
1965	6	2 201	4 486 484	13 863 149
1966	6	2 322	4 887 125	14 936 480
1967	6	2 247	4 838 435	15 216 376
1968	8	2 736	6 021 692	19 885 499
1969	8	2 658	5 809 576	20 466 697
1970	8	2 720	6 083 844	22 985 054
1971	8	2 709	5 854 722	23 393 425
1972	8	2 778	5 948 209	26 563 246
1973	8	2 966	6 328 335	31 402 028
1974	8	3 067	6 501 071	34 707 864
1975	8	3 050	6 426 261	39 750 493
1976[a]	8	3 155	6 680 000	49 694 000
1977[a]	8	3 079	6 468 000	52 699 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of establishments, and number of workers.

IRON MINING: INPUT STATISTICS, 1961-1977 (Cont'd)
(Mining Activity, Dollars)

Year	Cost of Fuel and Electricity	Cost of Materials & Supplies	Value of Production[b]	Value Added
1961	2 313 578	7 628 858	50 732 563	40 790 127
1962	2 478 689	9 287 799	54 340 728	42 574 240
1963	2 416 056	11 931 621	55 728 866	41 381 189
1964	3 046 173	16 052 568	64 828 571	45 729 830
1965	4 504 035	19 933 619	76 989 056	52 551 402
1966	5 319 059	22 964 321	76 482 228	48 198 848
1967	6 311 109	22 967 733	84 987 849	55 709 007
1968	9 738 415	27 582 157	105 966 319	68 645 747
1969	10 912 273	30 976 147	107 831 947	65 943 527
1970	12 199 075	34 002 088	126 994 391	80 793 228
1971	13 219 809	32 976 631	117 600 093	71 403 653
1972	13 852 422	34 312 805	123 473 774	75 308 547
1973	15 379 471	39 306 544	136 660 171	81 974 156
1974	20 810 438	47 003 714	155 859 119	88 044 967
1975	24 412 737	56 970 104	193 886 133	112 503 292
1976[a]	34 371 000	60 356 000	228 591 000	133 863 000
1977[a]	38 190 000	67 560 000	241 418 000	135 667 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of establishments, and number of workers.

[b]The value of production figures for iron mining differ from those in the table for iron ore production where the value of production figures are based on shipments of iron ores from all sources, including by-product iron ore recovered from base metal mines. For some operators the values of iron ore are on an f.o.b. port basis. By contrast, value of production in this table is on an f.o.b. mine basis and applies only to establishments classified as iron mines, and the output figures are estimates of production of all products of iron mines derived from shipments and changes in inventories.

IRON MINING: INPUT STATISTICS, 1961-1977
(Total Activity)

Year	Number of Employees	Salaries and Wages (Dollars)	Value Added (Dollars)
1961	2 213	13 096 570	41 079 474
1962	2 175	13 430 700	42 619 677
1963	2 108	13 296 299	41 499 838
1964	2 314	14 949 915	45 814 992
1965	2 777	18 297 958	52 548 752
1966	2 897	19 650 612	48 135 669
1967	2 869	20 712 012	56 139 694
1968	3 485	27 024 063	68 607 438
1969	3 360	27 020 610	66 207 158
1970	3 396	30 220 572	81 126 460
1971	3 377	31 327 574	71 608 606
1972	3 452	35 235 024	76 072 747
1973	3 639	40 805 275	82 133 841
1974	3 697	45 237 517	88 014 674
1975	3 739	52 096 680	111 910 699
1976[a]	3 835	63 486 000	133 915 000
1977[a]	3 767	67 322 000	134 929 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of employees.

OTHER METAL MINING[a]: INPUT STATISTICS, 1961-1977
(Mining Activity)

Year	Number of Establishments	Production and Related Workers		
		Number	Man-Hours Paid	Wages (Dollars)
1961	24	15 560	30 260 359	82 814 683
1962	27	14 522	28 089 887	77 970 343
1963	27	12 813	26 309 948	68 689 445
1964	30	13 213	26 812 555	70 666 375
1965	28	14 063	26 976 304	77 984 923
1966	29	14 725	28 682 510	83 817 736
1967	28	15 233	31 954 649	104 805 454
1968	29	16 174	34 845 380	119 182 967
1969	28	13 244	26 549 109	97 670 450
1970	28	16 896	35 046 632	145 012 900
1971	24	17 541	34 705 196	157 996 728
1972	20	15 667	30 776 299	150 935 350
1973	13	14 782	28 774 446	148 450 361
1974	18	15 353	30 034 644	158 997 651
1975	17	15 856	30 815 877	200 909 081
1976[b]	16	16 796	32 848 000	234 126 000
1977[b]	16	17 185	33 576 000	256 858 000

[a]Other metal mining includes SIC classifications copper-gold-silver mines (053), nickel-copper mines (054), silver-cobalt mines (055), silver-lead-zinc mines (056), uranium mines (057), and all other metal mines (059).
[b]For 1976 and 1977, figures are only available to the nearest thousand, except for number of establishments and number of workers.

OTHER METAL MINING[a]: INPUT STATISTICS, 1961-1977 (Cont'd)
(Mining Activity, Dollars)

Year	Cost of Fuel and Electricity	Cost of Materials & Supplies	Value of Production	Value Added
1961	8 608 998	169 613 519	563 025 406	384 802 889
1962	8 259 769	161 425 675	509 501 481	339 816 037
1963	8 162 067	155 686 105	492 600 712	328 752 540
1964	8 145 850	163 708 510	544 785 060	372 930 700
1965	7 507 477	200 049 890	585 852 562	378 295 195
1966	7 664 801	209 539 079	550 544 441	333 340 561
1967	9 472 255	298 565 521	780 527 605	472 489 829
1968	10 793 910	329 690 476	880 020 957	539 536 479
1969	12 517 945	331 561 167	814 721 626	470 642 514
1970	14 709 228	460 288 018	1 119 999 100	645 001 854
1971	17 299 513	477 387 952	1 020 767 033	526 079 568
1972	18 121 255	396 610 007	1 007 944 884	593 162 622
1973	19 278 630	472 609 344	1 433 486 695	941 598 771
1974	25 397 368	561 943 885	1 897 884 502	1 310 543 249
1975	31 458 981	592 341 983	1 628 945 814	1 005 145 120
1976[b]	38 629 000	670 518 000	1 814 677 000	1 105 531 000
1977[b]	49 342 000	696 122 000	1 761 446 000	1 015 983 000

[a]Other metal mining includes SIC classifications copper-gold-silver mines (053), nickel-copper mines (054), silver-cobalt mines (055), silver-lead-zinc mines (056), uranium mines (057), and all other metal mines (059).
[b]For 1976 and 1977, figures are only available to the nearest thousand, except for number of establishments and number of workers.

OTHER METAL MINING: INPUT STATISTICS, 1961-1977
(Total Activity)

Year	Number of Employees	Salaries and Wages (Dollars)	Value Added (Dollars)
1961	17 885	99 651 287	387 004 352
1962	16 826	95 219 078	341 872 804
1963	15 107	86 476 282	332 875 170
1964	15 496	88 786 302	376 002 045
1965	16 485	97 547 929	383 239 667
1966	17 458	107 085 826	337 566 649
1967	18 513	134 333 135	483 545 080
1968	19 105	146 108 641	543 088 723
1969	16 062	131 023 281	473 241 495
1970	21 582	197 906 133	649 601 191
1971	22 320	218 257 531	530 985 570
1972	20 302	213 582 598	604 217 489
1973	19 786	234 113 741	951 116 121
1974	21 673	255 691 295	1 331 076 827
1975	21 162	292 811 662	1 025 039 853
1976[a]	22 113	337 886 000	1 112 348 000
1977[a]	22 676	370 602 000	1 035 822 000

[a]For 1976 and 1977, figures are only available to the nearest thousand, except for number of employees.

INPUT STATISTICS 1945-1961

SOURCES

Information Systems Division, Mineral Policy Sector, Energy Mines and Resources.

INDUSTRY CLASSIFICATIONS

The four mining industries are defined according to the 1948 Standard Industrial Classifications (Statistics Canada 12-501). The industry definitions are as follows with SIC numbers in brackets:

i total metal mines (010);
ii gold quartz (0103);
iii iron mines (0109);
iv other metals[a] mining includes copper-gold-silver (0107), nickel-copper (0114), silver-cobalt (0115), silver-lead-zinc (0117), all other metals (0119).

[a]For 1945-1961 'other metals' are obtained by subtracting the sum of the figures for Gold and Iron from the corresponding figures for 'Total Metal Mines Excluding Smelting and Refining'. An alternative method would be to add the figures for the principal components of 'other metals' (i.e. copper-gold-silver, nickel-copper, silver-cobalt, silver-lead-zinc, uranium and miscellaneous metal mines). Both methods were used for several years and were found to give the same results.

INPUT STATISTICS: DIFFERENCES IN DEFINITION

Input series have been constructed for the years 1945-1961 and are shown in Table . Overlap between the 1945-1961 series and the 1961-1978 series is not possible for the full period since entirely new concepts were developed and used beginning in 1964. Statistics Canada carried the new series back to 1961, providing, therefore, three year overlap between the former and the present method of estimation.

In 1964, with the introduction of the new establishment concept in the Annual Census of Mines, changes were made in the method of estimating input statistics for the Metal Mining Industry. One of the main differences between the pre and post 1964 series was a decrease in the number of establishments. This reduction was due to the elimination of non-producing mines from the total.

Another change beginning in 1964 was to broaden the coverage of material included in 'materials and process supplies'. Prior to the 1964 changes 'process supplies' included 'explosives, chemicals, flux, drill steel, oxygen, lubricants, etc.'. After 1964 this series was expanded to include process, maintenance and repair supplies, ores, amounts paid to smelters and refineries, and other expenses. Thus this category increased substantially.

A major change also occurred in the method of estimating value added. Prior to 1964 this was referred to as 'net value of production' and was obtained by deducting the cost of fuel and electricity, process supplies and materials, freight, and treatment charges from the gross value of production. To obtain this gross value, metals were valued f.o.b. shipping point.

After 1964, 'value added' was obtained by deducting the cost of fuel and electricity, process supplies and materials from the gross value of production. To obtain gross value of production, metals were valued f.o.b. the minesite, thus eliminating the need to deduct freight costs from mine site to shipping point in the process of arriving at a 'value added' estimate. Under the revised concepts, the costs for smelting and refining charges are included as part of total shown under 'cost of materials and supplies'.

Thus when all these adjustments have been made, 'net value of production' and 'value added' differ by approximately the cost of ores, maintenance and repair supplies.

Prior to 1964 figures were not collected for total activity and thus a separate value added figure for a total activity can not be calculated.

In the 1945-61 series, total employment includes production and related workers and office employees at the mine site. In the 1961-79 series, total employment also includes sales personnel, office staff and other employees at head office. Production and related workers are defined similarly in both periods.

TOTAL METALS[a]: INPUT STATISTICS, 1945-61

Year	Number of Establishments[b]	Employment				
		Production and Related Workers			Total[d]	
		Number	Man Hours Paid	Wages $	Number	Wages and Salaries ($)
1945	260	16 736	-	33 675 874	18 498	39 167 294
1946	198	17 780	-	36 691 754	19 529	42 324 881
1947	184	19 630	-	45 402 598	21 465	52 036 640
1948	125	20 407	-	54 480 963	22 214	61 347 123
1949	119	20 715	-	58 018 106	22 655	65 548 126
1950	142	21 551	-	62 666 263	23 693	71 381 425
1951	125	22 988	50 560 847	73 162 030	26 027	85 413 213
1952	133	23 696	52 311 461	81 563 013	26 094	93 602 067
1953	106	23 536	47 905 657	82 378 541	25 936	94 321 958
1954	180[c]	23 458	49 262 590	86 342 487	25 923	98 283 199
1955	206	23 265	50 049 056	88 424 853	25 935	102 218 216
1956	211	25 652	53 731 788	103 303 001	28 782	120 291 235
1957	188	29 370	63 262 125	127 041 055	33 331	148 319 206
1958	163	31 024	66 383 223	140 849 473	35 759	167 268 845
1959	151	32 492	66 985 373	152 835 493	37 225	181 197 797
1960	149	30 758	63 453 290	148 184 896	35 002	174 618 518
1961	148	27 854	56 171 059	133 092 631	31 612	158 109 933

[a]The figures reported are for 'Total Metals' excluding 'Smelting and Refining'. These figures rather than 'Total Metals' figures are used in order to give a series which is consistent with the 1961-1978 data. In this latter series, 'Smelting and Refining' is not included in 'Total Metals'. Smelting and Refining operations are considered to be a manufacturing industry and so can be found in the Annual Census of Manufacturing.

[b]Number of plants.

[c]Data for 1954 includes uranium mining which was not shown in preceding years.

[d]Total Employment includes production workers plus administrative and office employees at the mine. Sales personnel, office staff and other employees at head office are not included before 1964.

TOTAL METALS: INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Cost of Fuel and Electricity ($)	Cost of Process Supplies[e] ($)	Paid to Smelters ($)	Freight Costs ($)	Gross Value of Production[f] ($)	Net Value of Production ($)
1945	4 746 345	14 790 821	670 690	1 473 648	116 832 998	95 151 494
1946	5 072 182	14 810 010	596 310	2 187 518	112 739 246	90 071 226
1947	5 694 208	19 384 246	440 915	2 959 473	131 115 552	102 636 710
1948	5 774 356	18 806 291	532 055	2 029 987	137 610 980	110 468 291
1949	6 140 043	21 165 872	662 193	3 426 859	151 514 063	120 119 096
1950	6 601 232	24 264 423	896 831	3 898 027	167 615 497	131 954 984
1951	7 280 134	26 411 733	1 063 140	4 696 947	179 790 336	140 338 382
1952	8 063 697	27 923 438	1 070 696	4 851 640	183 103 322	141 193 851
1953	8 533 153	28 120 488	2 358 124	5 393 230	183 797 216	139 392 221
1954	9 066 658	32 038 892	3 381 958	911 177[g]	194 333 732	148 935 053
1955	9 439 377	33 945 449	3 197 637	4 317 102	217 522 903	166 623 338
1956	13 250 275	38 383 559	2 753 085	5 964 591	242 323 332	181 971 822
1957	15 423 183	55 281 137	6 121 407	5 925 150	323 483 764	240 732 887
1958	17 762 346	69 130 393	11 670 317	9 352 076	438 759 208	330 844 076
1959	18 294 604	83 986 187	11 958 149	16 440 907	541 784 848	411 105 001
1960	18 165 566	72 723 656	10 618 425	13 135 991	503 607 960	388 955 937
1961	16 460 377	56 753 614	12 631 221	12 559 500	460 436 626	362 027 273

[e]Process supplies includes explosives, chemicals, flux, drill steel, oxygen, lubricants, etc.
[f]Gross Value is f.o.b. shipping point (Canadian $).
[g]figures are reproduced as reported. Apparently, part of freight costs must have been included with process supplies.

GOLD MINING: INPUT STATISTICS, 1945-1961

Year	Number of Establishments[a]	Employment: Production and Related Workers: Number	Employment: Production and Related Workers: Man Hours Paid	Employment: Production and Related Workers: Wages $	Employment: Total[b]: Number	Employment: Total[b]: Wages and Salaries ($)
1945	230	10 374	-	20 678 400	11 535	24 162 621
1946	167	12 796	-	25 832 151	14 050	29 864 349
1947	154	13 286	-	29 883 507	14 574	34 478 742
1948	90	13 142	-	33 512 775	14 353	38 056 266
1949	76	13 002	-	34 448 703	14 234	38 986 236
1950	101	13 010	-	36 005 536	14 347	41 213 560
1951	79	12 415	29 189 050	37 147 168	14 504	44 887 096
1952	73	11 952	27 558 275	37 873 938	13 269	44 402 133
1953	63	10 769	23 641 865	32 138 853	11 948	37 456 712
1954	44	10 558	24 311 000	34 380 322	11 647	39 393 783
1955	42	10 470	24 540 648	35 130 783	11 582	40 440 711
1956	40	10 233	22 742 832	35 151 852	11 342	40 594 711
1957	38	10 541	22 540 471	36 786 578	11 657	42 485 179
1958	41	10 500	22 676 344	37 278 913	11 626	43 192 830
1959	46	10 590	22 790 887	38 554 380	11 732	44 783 710
1960	48	10 660	23 000 980	39 936 709	11 824	46 368 228
1961	56	10 175	21 747 471	39 061 833	11 403	46 170 029

[a]From 1945 to 1953 (inclusive) Total is for firms. Beginning in 1954, the number given is for plants.
[b]Total Employments includes production workers plus administrative and office employees at the mine. Sales personnel, office staff and other employees at head office are not included before 1964.

GOLD MINING: INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Cost of Fuel and Electricity ($)	Cost of Process Supplies[c] ($)	Paid to Smelters ($)	Freight Costs ($)	Gross Value of Production[d] ($)	Net Value of Production ($)
1945	3,228,662	7,486,469	627,930	100,910	59,649,319	48,205,348
1946	3,669,993	9,503,694	586,350	121,664	65,297,233	51,415,532
1947	4,019,260	11,706,846	439,498	103,372	66,962,574	50,693,598
1948	3,903,298	12,633,666	508,991	137,358	72,607,828	55,424,515
1949	4,115,746	14,297,000	562,169	116,059	84,278,641	65,187,667
1950	4,403,534	15,395,634	590,858	106,285	93,167,805	72,671,494
1951	4,409,161	16,076,455	648,579	96,107	89,603,190	68,372,888
1952	4,318,676	16,147,324	573,139	94,722	86,349,951	65,216,090
1953	3,756,784	14,022,963	538,156	115,242	74,586,677	56,153,532
1954	3,842,328	14,923,060	563,904	91,903	78,897,941	59,476,746
1955	4,047,304	16,015,034	556,557	88,312	85,953,033	65,245,826
1956	3,988,281	15,253,659	587,915	85,777	85,290,601	65,374,969
1957	4,062,479	16,131,450	624,312	109,746	85,444,085	64,516,098
1958	4,289,200	15,942,442	654,888	110,543	90,657,790	73,686,052
1959	4,307,333	15,376,966	613,840	108,653	88,864,666	68,457,874
1960	4,438,198	16,449,845	628,119	110,507	91,508,838	69,882,169
1961	4,643,114	13,736,874	553,538	105,557	91,976,712	72,937,629

[c]Process Supplies includes explosives, chemicals, flux, drill steel, oxygen, lubricants, etc.
[d]Gross Value is f.o.b. shipping point ($ Canadian).

IRON MINING: INPUT STATISTICS, 1945-1961

Year	Number of Establishments[a]	Employment				
		Production and Related Workers			Total[b]	
		Number	Man-Hours Paid	Wages $	Number	Wages and Salaries ($)
1945	7	649	-	1 463 494	787	1 725 992
1946	8	716	-	1 661 078	787	1 880 242
1947	7	678	-	1 790 563	745	2 036 954
1948	4	796	-	2 496 333	867	2 715 196
1949	5	998	-	3 136 626	1 128	3 600 710
1950	6	1 170	2 601 108	3 636 877	1 353	4 311 632
1951	8	1 096	2 563 942	3 776 749	1 254	4 435 450
1952	9	1 301	4 820 415	4 973 902	1 492	5 837 510
1953	6	1 864	3 540 986	7 520 921	2 118	8 823 364
1954	12	2 007	3 845 320	8 170 197	2 230	8 939 229
1955	9	1 727	3 677 297	7 061 835	2 017	8 544 655
1956	14	2 220	4 733 985	9 863 199	2 543	11 749 638
1957	21	2 562	5 430 189	13 171 913	2 865	15 085 479
1958	19	2 149	4 414 245	10 582 538	2 550	12 912 229
1959	14	2 196	4 482 798	11 909 314	2 672	15 090 076
1960	23	2 260	5 117 550	13 566 817	2 700	16 901 830
1961	14	1 970	3 742 877	10 509 909	2 449	14 670 917

[a]Number of plants.
[b]Total Employments includes production workers plus administrative and office employees at the mine. Sales personnel, office staff and other employees at head office are not included before 1964.

IRON MINING: INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Cost of Fuel and Electricity ($)	Cost of Process Supplies[c] ($)	Freight Costs ($)	Gross Value of Production[d] ($)	Net Value of Production ($)
1945	705 148	304 666	1 367 526	3 635 095	1 257 755
1946	676 029	602 351	2 065 095	6 822 947	3 479 472
1947	679 082	384 124	2 854 530	9 313 201	5 395 465
1948	798 738	1 197 189	1 884 526	7 482 860	3 602 407
1949	853 494	933 071	3 301 911	13 192 781	8 104 305
1950	1 054 596	1 936 401	3 771 018	17 562 059	10 800 044
1951	1 265 948	1 424 436	4 542 998	21 205 152	13 971 770
1952	1 586 538	1 193 130	4 647 321	19 632 551	12 205 562
1953	2 247 083	1 552 334	4 946 191	23 137 997	14 392 389
1954	2 034 194	4 929 867[e]	479 851	20 365 003	12 921 091
1955	1 902 080	2 737 526	3 887 578	34 340 897	25 813 713
1956	4 378 596	3 947 417	5 551 732	44 177 246	30 299 501
1957	3 768 954	5 323 425	4 605 859	41 317 629	27 619 391
1958	3 702 921	3 258 675	5 559 818	36 851 421	24 330 007
1959	3 954 432	3 547 986	11 828 658	50 830 404	31 499 328
1960	3 641 468	3 905 029	9 653 387	48 399 442	31 199 558
1961	3 102 918	5 081 515	8 807 146	61 157 282	44 165 703

[c]Process Supplies includes explosives, chemicals, flux, drill steel, oxygen, lubricants, etc.
[d]Gross Value is f.o.b. shipping point (Canadian $).
[e]Figures are reproduced as reported. Apparently part of freight costs must have been included with process supplies.

OTHER METALS: INPUT STATISTICS, 1945-1961

Year	Number of Establishments	Employment				
		Production and Related Workers			Total[c]	
		Number	Man-Hours Paid	Wages $	Number	Wages and Salaries ($)
1945	23	5 713	-	11 533 980	6 176	13 278 761
1946	23	4 268	-	9 198 525	4 692	10 580 290
1947	23	5 666	-	13 728 528	6 146	15 520 933
1948	31	6 469	-	18 471 855	6 994	20 575 661
1949	38	6 715	-	20 432 777	7 293	22 961 180
1950	35	7 371	-	23 023 850	7 993	25 856 233
1951	38	9 477	18 807 855	32 238 113	10 269	36 090 667
1952	51	10 443	19 932 771	38 715 173	11 333	43 362 424
1953	37	10 903	20 722 806	42 718 767	11 870	48 041 882
1954	124	10 893	21 106 270	43 791 968	12 055	49 950 187
1955	155	11 068	21 831 111	46 232 235	12 336	53 232 850
1956	157	13 199	26 254 971	58 287 950	14 897	67 946 886
1957	129	16 267	35 291 465	77 082 564	18 809	90 748 548
1958	103	18 375	39 292 634	92 988 022	32 043	111 163 786
1959	91	19 706	39 711 688	102 371 799	22 821	111 324 011
1960	78	17 838	35 334 760	94 681 370	20 478	111 348 460
1961	78	15 709	30 680 711	83 520 889	17 760	97 268 987

Note: Figures for 'Other Metals' are obtained by subtracting the sum of the figures for Gold and Iron from the corresponding figures for Total Metal Mines excluding Smelting and Refining. An alternative method would be to add the figures for the principal components of 'Other Metals' (i.e. copper-gold-silver, nickel-copper, silver-cobalt, silver-lead-zinc, uranium and miscellaneous metal mines). Both methods were used for several years and were found to give the same results. Production of some metals included in the miscellaneous group is confined to a few operators and the extraction of certain types of ores often fluctuates in an erratic manner according to demand and supply. Thus the inputs may also fluctuate.
The footnotes to the Total Metal, Gold, and Iron tables also apply to this table.

OTHER METALS: INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Cost of Fuel and Electricity ($)	Cost of Process Supplies[e] ($)	Paid to Smelters ($)	Freight Costs ($)	Gross Value of Production[f] ($)	Net Value of Production ($)
1945	812 535	6 999 686	42 760	5 212	53 548 584	45 688 391
1946	726 160	4 703 955	9 960	759	40 619 066	35 176 222
1947	995 866	7 293 276	1 417	1 571	54 839 777	46 547 647
1948	1 072 320	4 975 436	23 064	8 103	57 520 292	51 441 369
1949	1 170 803	5 935 801	100 024	8 889	54 042 641	46 827 124
1950	1 143 102	6 932 388	305 973	20 724	56 885 633	48 483 446
1951	1 605 025	8 910 842	414 561	57 842	68 981 994	57 993 724
1952	2 158 483	10 582 984	497 557	109 597	77 120 820	63 772 199
1953	2 529 286	12 545 191	1 819 968	331 797	86 072 542	68 846 300
1954	3 190 136	12 185 965	2 818 054	339 417	95 070 788	76 537 216
1955	3 489 993	15 192 889	2 641 080	341 212	97 228 973	75 563 799
1956	4 883 398	19 182 483	2 165 170	327 082	112 855 485	86 297 352
1957	7 591 750	33 826 262	5 497 095	1 209 545	196 722 050	148 597 398
1958	9 770 225	49 929 276	11 015 429	3 681 715	311 249 997	232 828 017
1959	10 032 839	65 061 835	11 344 309	4 503 596	402 089 778	311 147 799
1960	10 085 900	52 368 782	9 990 306	3 372 097	363 699 680	287 874 210
1961	8 714 345	37 925 225	12 077 683	3 646 797	307 302 632	244 923 941

The footnotes to the Total Metal, Gold, and Iron tables also apply to this table.

SMELTING AND REFINING

SOURCES

Dominion Bureau of Statistics, Report on the Manufacturing Industries of the Province of Ontario (31-D-26); Manufacturing Industries of Canada, by Provinces (31-203); Manufacturing Industries of Canada, Section D, Province of Ontario (31-206); Statistics Canada, Manufacturing Industries of Canada, Ontario (31-206); Manufacturing Industries of Canada: National and Provincial Areas (31-203); Smelting and Refining (41-214).

INDUSTRY CLASSIFICATION

Smelting and refining (SIC 295) is classed as a manufacturing industry by Statistics Canada. The classification of manufacturing industries has undergone two changes. The first occurred in 1949 with the adoption of the Standard Industrial Classification (SIC) (1948). The SIC replaced the industry classification scheme based on the nature of materials used by manufacturing establishments. The SIC combines the concept of purpose (nature of output) with the nature of materials used. Second, in 1960, the 1960 SIC supplanted the 1949 SIC. These changes in classification procedure did not affect the continuity of statistics for the Ontario smelting and refining industry.

THE DATA SERIES

The smelting and refining industry series presented here incorporate all available data revisions. The series begin at 1925, although statistics for the industry were inaugurated, in different and abbreviated format, with the preliminary report for 1919. The data were not published for 1920 and 1921 and, curiously, smelting and refining does not appear in published data sources among the leading forty manufacturing industries in Ontario from 1922 to 1924.

CONCEPTS AND DEFINITIONS

The descriptions of concepts and definitions are based mainly on the explanatory notes contained in the following publications of the Dominion Bureau of Statistics: The Manufacturing Industries of Canada, Section A, Summary for Canada, 1952 (31-203); General Review of the Manufacturing Industries of Canada, 1959 (31-201); The Manufacturing Industries of Canada, Section D, Province of Ontario, 1960 (31-206); General Review of the Manufacturing Industries of Canada, 1961 (31-201); Manufacturing Industries of Canada, Section D, Province of Ontario, 1962 (31-206); Manufacturing Industries of Canada, Section D, Province of Ontario, 1963 (31-206); Smelting and Refining, 1961 (41-214); and Smelting and Refining, 1964 (41-214).

Methodological Changes of the Early 1960s

In the early 1960s, several important methodological changes affecting the series of principal statistics for the manufacturing industries were phased in by Statistics Canada. The major changes included:

- i the adoption of the 1960 Standard Industrial Classification;
- ii the implementation of a new concept of the establishment;
- iii the introduction of the total activity concept;
- iv the separate recording of head office data at the industry group level.

The collective effect of these changes on the data for the Ontario smelting and refining industry can be traced by examining the revised data series which Statistics Canada carried back to 1957. Comparison of the original and revised data series for 1957 to 1961 discloses that the combined effect of (i), (ii), and (iv) above was negligible. (D.B.S., Manufacturing Industries of Canada, Section D, Province of Ontario, 1962 (31-206), p. 5.)

The introduction of the total activity concept (iii) did not affect the existing series; this involved incorporating additional series into manufacturing industry statistics.

Manufacturing Activity and Total Activity

The data series for smelting and refining distinguish between manufacturing activity and total activity. The manufacturing activity concept relates to activities associated with the production and marketing of smelter and refinery products. The series included under manufacturing activity are: numbers, man-hours paid, and wages for production and related workers; cost of fuel and electricity; cost of materials and supplies; value of production, manufacturing activity; and value added, manufacturing activity.

Total activity comprises manufacturing and non-manufacturing activities. Non-manufacturing activities include shipments of goods not of own manufacture and other revenue-producing activities.

Shipments of goods not of own manufacture include goods sold in much the same condition as purchased or received.

Other revenue represents the book value of fixed assets produced during the year for use of reporting establishments by the establishment's own employees and for which depreciation accounts are maintained. Also included are revenues from the sale of electricity, servicing revenues, commissions on sales (when not included in value of sales), revenue for company-operated cafeterias and lunch counters and revenue from outside installation or construction work not related to the establishment's own products, sale of used materials, research and development work, and so on. Other revenue does not include non-operating revenue such as rent, dividends and interest.

The table contains seven series under total activity: number and salaries of administrative employees; number and salaries and wages of total employees; total cost of materials, supplies and goods for resale; gross value; and value added.

Before 1961 the main emphasis in compiling industry data was on manufacturing activity. The total activity concept was introduced for 1961, and since then the establishment reports on all the activities (with some exceptions) conducted within its accounting boundaries.

Establishment

The establishment is the reporting unit from which industry principal statistics are compiled. An establishment in the smelting and refining industry is a plant engaged mainly in smelting and/or refining nonferrous metals. Beginning with 1961, the establishment is the smallest separate operating entity capable of reporting all of the following accounting data: number of employees and wages and salaries; man-hours worked and paid; fuel and power consumed; materials and supplies used; goods purchased for resale as such; inventories; and shipments or sales. The reporting requirements were essentially the same for the years before 1961 except that employment could be reported as the number of employees, or man-hours, or man-days, and that inventories were to be reported beginning with the census of industry for 1954.

The number of establishments represents the number of operating units that are principally engaged in nonferrous metal smelting and refining.

Production and Related Workers

These include workers engaged directly in manufacturing activities, and those employed in storing, inspecting, handling, packing, warehousing, and so on. They also include employees engaged in maintenance, repair, janitorial and watchman services, and line supervisors (working foremen) engaged in work similar to that of the employees they supervise.

Production and Related Workers: Number

The number of workers is an average for the year. This is calculated by summing the monthly figures of those receiving pay during the last pay period of each month and dividing by twelve. This procedure is followed even if an establishment did not operate in all months, in order to arrive at equivalent annual full-time employment.

The method for computing the number of wage earners for 1925 to 1930 differed from the procedure used for the years following. Although the source document does not describe the method, it does indicate that the method tended to increase the number somewhat. (D.B.S., Manufacturing Industries of Canada, Section D, Province of Ontario, 1947 (31-203), footnote to table 1, p. 4.)

Production and Related Workers: Man-Hours Paid

Man-hours represent total man-hours paid. Total hours paid include total hours at work during the calendar year plus hours not worked but paid for, such as paid vacations, sick leave, and statutory holidays. Overtime hours are also included, but only hours actually at work. Data for man-hours paid are not available for the years before 1961.

Wages, and Salaries and Wages

Wages, and salaries and wages, refer to gross earnings of employees before deductions for income tax and employee contributions to social benefits such as sickness, accident, unemployment insurance, and pensions. They include all salaries, wages, bonuses, profits shared with employees, the value of room and board where provided, commissions paid to regular employees, as well as any other allowance forming part of the worker's earnings. Payments for overtime are also included.

Cost of Fuel and Electricity

These figures refer to amounts actually used. Any electricity produced by establishments for own use is not included in the total cost. The values represent the laid-down cost at the establishment including freight and duty. The figure for fuel and electricity used in manufacturing activity also includes relatively small amounts used in non-manufacturing activities.

Cost of Materials and Supplies

These figures represent the laid-down cost at the establishment of materials, supplies and purchased components owned and used during the year in manufacturing activities and related processes. These include only commodity items or physical goods either purchased from others or received as transfers from other establishments of the reporting company. Maintenance and repair supplies not chargeable to fixed assets accounts and any amounts charged by other establishments for work done on materials owned by the reporting establishment are included. Cost of repairs or maintenance done by outside contractors and cost of returnable containers are not included.

A major discontinuity occurs in this series between 1960 and 1961, as a result of a change in the method of valuing ores and concentrates used by the smelters and refineries of vertically integrated nonferrous metal mining companies. The procedure before 1961 involved some duplication in smelting and refining of some values already credited to the mines. (This also resulted in an overstatement in the value of production and value added in manufacturing activity.) In addition, there was incomplete coverage of materials and supplies used by the various establishments of the integrated companies.

Also, since no market values exist for the ores and concentrates used as inputs in the smelting and/or refining operations of the integrated companies, the assigned transfer values were not considered realistic. The procedure was changed to treat smelting and refining activities of integrated companies as custom operations whether or not their plants only smelted and refined ores and concentrates from their own mines. This procedure eliminated the need to apply artificial values to the ores and concentrates transferred to the smelters and to value the output of the smelters and refineries in terms of commodities produced.

The revenue from integrated operations has, since 1961, accrued to the mines concerned. This avoids duplication, as was encountered before 1961, in both the mining and in the smelting and refining industries. Thus, since 1961, the revenue from the smelting and refining operations of the vertically integrated companies has consisted mainly of the treatment costs of the ores and concentrates produced by their own mines plus the revenue from custom and toll charges of non-company ores and concentrates.

Value of Production, Manufacturing Activity

The figures for value of production are alternately based on actual production and shipments data. Until 1951, the data are for value of products made. In 1952, a shipments concept was adopted for computing value of production statistics. It was not possible to derive value of production figures residually for 1952 and 1953 since data for opening and closing inventories were not collected in the census of manufacturers for these years. This oversight was corrected in 1954, making possible the computation of the value of products made. Shipments data only continued to be used as value of production for smelting and refining until 1956 when the output figures were based on production. For 1961 and subsequent years, however, the value of production is the value of shipments.

The value of production in manufacturing activity also includes revenues from repairs and custom work performed for other establishments. The cost of any goods produced by the manufacturing establishment and shipped on a rental basis are also included. All products and by-products of own production shipped from the establishment are included, including transfer shipments to sales outlets, distributing warehouses or to other processing plants of the reporting firm, when such units are treated as separate establishments.

Production values are net of returned goods, discounts, returns, allowances, sales tax, excise taxes and duties, returnable containers and charges for outward transportation by common or contract carriers. Transportation or delivery expense incurred by the reporting establishment's own carriers are included.

Value Added, Manufacturing Activity

The method of computing value added changed a number of times, thereby creating discontinuities in the series. The computation procedures are:

1925-34: value of production less cost of materials and supplies;

1935-51: value of production less cost of materials and supplies and cost of fuel and electricity;

1952-53: value of shipments less cost of materials and supplies and cost of fuel and electricity;

1954-60: value of shipments plus (or minus) change in inventories of finished goods less cost of materials and supplies and cost of fuel and electricity;

1961-79: value of shipments plus (or minus) change in inventories of finished goods and goods-in-process less cost of materials and supplies and cost of fuel and electricity.

Administrative Employees

This category includes administrative, office, and other non-manufacturing employees. It includes all executives and supervisory officials,

managers, professional and technical employees, superintendents and factory supervisors above the line supervisor or working foreman level, and clerical employees. Also included are employees located at head offices or auxiliary units separately located from the establishment. These figures also include a small number of employees in sales and distribution and any production workers employed in non-manufacturing activities.

Total Employees

This is the total of production and related workers in manufacturing and non-manufacturing activities, administration and office employees, and sales and distribution workers, including employees located at head offices and auxiliary units separately located from the establishment. The figures for production and related workers in non-manfacturing activity, administrative and office employees, and sales and distribution workers are annual averages and represent as closely as possible full-time employment.

Cost of Materials, Supplies and Goods for Resale

These figures represent the cost of materials or products purchased for others by the reporting establishment, or received as transfers from other establishments of the reporting company for resale as such in the same condition as purchased.

Gross Value, Total Activity

This is the sum of the value of production in manufacturing and non-manufacturing activities.

Value Added, Total Activity

Value added for total activity is the sum of value added for manufacturing activity and value added for non-manufacturing activity. Value added for non-manufacturing activity is compiled by deducting the cost of goods purchased for resale (adjusted for changes in the value of inventories of goods purchased for resale) and the cost of non-manufacturing materials and supplies used from the value of shipments of goods not of own manufacture, plus other revenue.

In some cases, total value added may be less than value added for manufacturing activity as a result of expenditures associated with non-manufacturing activities exceeding revenues from such activities, or because of a decrease in inventory of goods not of own manufacture exceeding the mark-up on the sale of such goods.

SMELTING AND REFINING: INPUT STATISTICS, 1925-1977
(Manufacturing Activity)

Year	Number of Establishments	Production and Related Workers		
		Number	Man-Hours Paid (Thousands)	Wages ($ Thousand)
1925	4	a	b	a
1926	5	2 031	b	2 791
1927	5	2 088	b	2 919
1928	5	2 350	b	3 445
1929	5	3 195	b	4 789
1930	7	3 482	b	5 182
1931	7	2 552	b	4 057
1932	6	1 514	b	2 192
1933	7	2 345	b	3 196
1934	7	3 321	b	4 593
1935	8	3 907	b	5 366
1936	8	4 970	b	6 678
1937	7	5 981	b	9 021
1938	7	5 819	b	8 958
1939	7	5 722	b	8 924
1940	7	5 594	b	8 864
1941	7	5 916	b	10 010
1942	8	6 362	b	11 529
1943	7	7 180	b	13 123
1944	7	7 549	b	13 210
1945	7	6 239	b	11 701
1946	7	5 271	b	10 149
1947	7	6 678	b	13 783
1948	7	6 757	b	17 579
1949	8	6 642	b	18 769
1950	8	7 133	b	20 464
1951	7	8 257	b	26 090
1952	7	8 688	b	30 296
1953	7	8 634	b	32 010
1954	8	8 844	b	33 394
1955	9	9 102	b	35 647
1956	9	9 440	b	39 322
1957	9	9 853	b	43 492
1958	10	7 018	b	30 588
1959	9	9 317	b	42 285
1960	9	9 662	b	45 378
1961	8	9 322	18 017	45 103
1962	7	8 748	16 654	41 917
1963	7	7 132	14 694	35 130
1964	7	8 112	16 586	40 103
1965	7	9 250	19 467	49 397

SMELTING AND REFINING: INPUT STATISTICS, 1925-1977 (Cont'd)
(Manufacturing Activity)

Year	Number of Establishments	Production and Related Workers		
		Number	Man-Hours Paid (Thousands)	Wages ($ Thousand)
1966	7	9 034	17 578	47 846
1967	7	9 323	19 614	59 648
1968	7	9 031	18 245	60 488
1969	7	6 876	12 951	44 243
1970	7	9 532	19 408	72 031
1971	6	9 321	18 739	77 315
1972	7	7 791	15 798	68 916
1973	9	6 871	14 444	68 030
1974	9	8 468	18 030	87 945
1975	9	6 518	12 960	71 898
1976	9	7 819	15 533	99 319
1977	9	7 780	15 445	104 948

[a]Not available.
[b]Not available for 1925-1960.

SMELTING AND REFINING: INPUT STATISTICS, 1925-1977
(Manufacturing Activity, $ Thousand)

Year	Cost of Fuel and Electricity	Cost of Materials	Value of Production	Value Added
1925	c	5 822	27 041	d
1926	c	7 834	25 732	6 383
1927	c	9 765	27 502	17 737
1928	c	8 763	37 159	28 397
1929	c	11 615	48 900	37 285
1930	c	19 890	47 736	27 846
1931	c	19 202	41 257	22 056
1932	c	9 930	22 026	12 096
1933	c	15 161	43 519	28 358
1934	c	42 911	85 989	42 288
1935	913	64 210	105 035	39 912
1936	890	87 646	137 345	48 809
1937	7 602	113 911	192 249	70 735
1938	6 749	102 982	166 013	96 281
1939	7 067	83 022	134 727	44 638
1940	8 629	94 257	150 476	47 590
1941	c	109 879	171 100	51 422
1942	c	125 824	185 715	49 206
1943	c	136 259	186 601	38 095
1944	c	135 906	179 257	31 024
1945	c	114 647	162 606	37 171
1946	c	81 917	119 240	29 313
1947	c	123 405	191 999	57 590
1948	c	146 219	235 936	76 707
1949	c	128 963	237 688	95 401
1950	c	136 504	264 301	113 611
1951	c	176 377	353 411	161 482
1952	16 669	181 561	348 740	150 509
1953	16 841	197 567	376 501	162 094
1954	18 184	211 607	403 152	173 361
1955	17 573	256 783	492 930	218 574
1956	19 587	300 683	554 056	233 786
1957	20 479	353 813	611 078	236 747
1958	14 573	246 135	427 031	166 323
1959	20 192	342 991	580 200	217 817
1960	20 655	353 517	621 641	247 469
1961	20 474	87 650	181 661	73 538
1962	17 995	97 779	187 511	71 736
1963	16 730	67 798	146 127	61 599
1964	18 541	49 549	133 341	62 251
1965	22 367	46 642	153 948	84 940
1966	21 580	47 807	157 378	87 991
1967	23 624	40 437	169 939	105 878
1968	26 100	48 252	185 983	111 630
1969	18 775	36 331	146 807	91 702
1970	29 893	49 112	212 184	133 179

SMELTING AND REFINING: INPUT STATISTICS, 1925-1977 (Cont'd)
(Manufacturing Activity, $ Thousand)

Year	Cost of Fuel and Electricity	Cost of Material	Value of Production	Value Added
1971	35 341	45 407	231 493	150 745
1972	29 442	41 680	206 167	135 045
1973	32 017	51 055	213 487	130 414
1974	39 766	60 453	275 846	175 627
1975	45 222	55 432	282 800	182 146
1976	59 700	61 823	339 573	218 050
1977	63 808	73 288	366 589	229 494

[c]Not available for 1925-1934, 1941-1951.
[d]Not available for 1925.

SMELTING AND REFINING: INPUT STATISTICS, 1925-1977
(Total Activity)

Year	Administrative Employees		Total Employees	
	Number	Salaries ($ Thousand)	Number	Salaries and Wages ($ Thousand)
1925	a	a	2 431	3 456
1926	175	502	2 206	3 293
1927	183	538	2 271	3 457
1928	180	545	2 530	3 990
1929	205	613	3 400	5 402
1930	232	733	3 714	5 916
1931	223	726	2 775	4 783
1932	204	604	1 718	2 796
1933	190	591	2 535	3 787
1934	254	776	3 575	5 369
1935	302	928	4 209	6 294
1936	353	1 044	5 323	7 722
1937	399	1 202	6 380	10 223
1938	327	1 066	6 146	10 024
1939	323	1 073	6 045	9 997
1940	669	1 862	6 263	10 726
1941	679	1 989	6 595	11 999
1942	813	2 260	7 175	13 789
1943	873	2 357	8 053	15 480
1944	875	2 452	8 424	15 662
1945	905	2 432	7 144	14 132
1946	832	2 542	6 103	12 691
1947	914	2 994	7 192	16 777
1948	985	3 624	7 742	21 203
1949	1 052	4 145	7 694	22 914
1950	1 149	4 624	8 252	25 089
1951	1 282	5 403	9 359	31 493
1952	1 330	6 247	10 018	36 544
1953	1 378	6 517	10 012	38 527
1954	1 418	7 064	10 262	40 458
1955	1 493	7 722	10 595	43 368
1956	1 543	8 457	10 985	47 779
1957	1 669	9 835	11 522	53 327
1958	1 618	10 601	8 636	41 190
1959	1 628	10 337	10 945	52 622
1960	1 715	11 076	11 377	56 454
1961	1 718	11 361	11 040	56 464
1962	1 739	11 922	10 487	53 840
1963	2 003	13 805	9 135	48 935
1964	1 848	13 476	9 960	53 579
1965	2 010	15 267	11 260	64 664

SMELTING AND REFINING: INPUT STATISTICS, 1925-1977 (Cont'd)
(Total Activity)

Year	Administrative Employees		Total Employees	
	Number	Salaries ($ Thousand)	Number	Salaries and Wages ($ Thousand)
1966	2 217	18 332	11 251	66 177
1967	2 231	19 622	11 554	79 270
1968	2 487	23 191	11 518	83 679
1969	2 841	26 759	9 717	71 001
1970	3 103	33 270	12 635	105 301
1971	3 533	39 834	12 854	117 149
1972	3 413	41 578	11 204	110 494
1973	1 488	20 895	8 359	88 925
1974	1 505	23 005	9 973	110 951
1975	3 312	54 106	9 830	126 004
1976	3 052	55 512	10 871	154 832
1977	2 861	58 153	10 641	163 101

[a]Not available for 1925.

SMELTING AND REFINING: INPUT STATISTICS, 1961-1977
(Total Activity, $ Thousand)

Year	Total Cost of Materials, Supplies and Goods for Resale	Gross Value, Total Activity	Value Added, Total Activity
1961	91 381	185 590	73 884
1962	100 751	190 827	71 931
1963	79 153	159 236	63 353
1964	59 547	145 127	67 039
1965	59 092	170 094	88 635
1966	77 980	185 888	90 174
1967	62 018	197 260	107 702
1968	67 549	207 441	113 792
1969	47 996	159 370	92 583
1970	81 029	248 029	137 086
1971	72 317	262 778	155 120
1972	53 343	221 179	138 394
1973	59 773	226 456	134 666
1974	69 840	290 914	181 308
1975	59 767	295 550	190 561
1976	63 132	345 459	222 627
1977	75 189	379 419	240 422

GENERAL NOTE ON ENERGY INPUT STATISTICS

As in the case of principal input statistics, the energy input series are divided into two periods: 1945 to 1961, and 1961 to 1977. The division arises from changes in the Census format. Coverage for the years 1946 to 1961 is more extensive, including all energy inputs, whereas for the period 1961 to 1977 only data for selected inputs are recorded.

SELECTED ENERGY INPUT STATISTICS - 1961-1977

SOURCE

This section contains quantity and value data for selected energy inputs used in Total Metal Mining, gold mining, iron mining, and other metal mining industries. Data on energy inputs are not published at the provincial level. The data presented in the tables were obtained from the Mineral Units Manufactured and Primary Industries Division, Statistics Canada.

INDUSTRY CLASSIFICATIONS

The metal mining (including milling) industries are defined according to the 1970 Standard Industrial Classification (Statistics Canada, 12-501E). The industry definitions are as follows, with SIC numbers in brackets:

i total metals (05);
ii gold mining includes gold quartz mines (0520);
iii iron mining includes iron mines (0580);
iv other metal mining includes:
copper-gold-silver mines (0591);
nickel-copper mines (0592);
silver-cobalt mines (0593);
silver-lead-zinc mines (0594);
molybdenum mines (0595);
uranium mines (0570);
and miscellaneous metal mines, n.e.s. (0599).

METHODS

Quantity and value data are produced for five groups of energy inputs: coal and coke; gasoline; fuel oils; natural gas; and electricity purchased. The figures for each type of input refer to the amounts actually used in mining and milling activities, although the series include relatively small amounts used in nonmining activities. Values represent the laid-down cost at the mine or mill including freight and duty.

The data on energy inputs are conceptually identical to the series on cost of fuel and electricity in the sections of this compendium on principal statistics. However, since only data for selected energy inputs are included in this section, the aggregate values for all energy series will add up to less than the total cost of fuel and electricity in each metal mining industry.

In 1966 and in 1973 changes were made in the Census of Mines survey questionnaire as to the level of disaggregation by type of energy input used. The major changes in format were introduced in 1973, and had two prominent features. First, separate categories for the different types of coal, and coke were collapsed into one aggregate figure, coal and coke. This decision was made because the quantity of coal used in mining operations had declined considerably over the years. Second, in response to user requests for greater detail, the liquid fuels category was broken down into groupings by grade, employing the terminology generally used by fuel producers.

Owing to such changes in the Census format, it was necessary to organize energy input data from the source documents into the five categories in order to produce consistent series covering the entire 1961-1977 period.

TOTAL METAL MINING: SELECTED ENERGY INPUT STATISTICS, 1961-1977

Year	Coal & Coke (Short tons)	Coal & Coke (Tonnes)	Coal & Coke (Dollars)[a]	Gasoline (Imperial Gallons)	Gasoline (Litres)	Gasoline (Dollars)
1961	106 358	96 467	1 510 534	857 855	3 899 809	305 446
1962	91 890	83 344	1 362 412	820 972	3 732 139	286 642
1963	83 954	76 146	1 247 275	782 714	3 558 218	286 131
1964	74 018	67 134	1 130 851	912 844	4 149 789	334 222
1965	52 858	47 942	804 226	988 492	4 493 685	365 467
1966	52 650	47 754	795 215	1 073 763	4 881 327	378 835
1967	54 636	49 555	868 828	1 032 059	4 691 740	388 914
1968	52 370	47 500	867 758	1 042 431	4 738 891	412 500
1969	56 723	51 448	936 987	1 175 926	5 345 760	456 689
1970	48 543	44 029	850 322	1 283 676	5 835 591	476 991
1971	26 973	24 465	569 867	1 235 165	5 615 060	487 658
1972	26 123	23 694	580 263	1 186 457	5 393 634	472 989
1973	23 605	21 410	530 426	1 163 297	5 288 348	482 067
1974	185 700	168 430	3 515 362	1 178 917	5 359 357	615 807
1975	191 219	173 436	4 063 339	1 339 438	6 089 085	841 201
1976	271 749	246 476	5 394 100	1 496 208	6 801 762	1 044 095
1977	137 991	125 158	2 821 182	1 477 173	6 715 228	1 079 944

TOTAL METAL MINING: SELECTED ENERGY INPUT STATISTICS, 1961-1977 (Cont'd)

Year	Fuel Oil (Imperial Gallons)	Fuel Oil (Litres)	Fuel Oil (Dollars)	Natural Gas (Thousands of Cubic Feet)	Natural Gas (Thousands of Cubic Metres)	Natural Gas (Dollars)
1961	11 769 386	53 503 629	1 680 770	733 030	20 757	299 130
1962	13 118 942	59 638 710	1 902 895	625 298	17 707	320 547
1963	12 388 663	56 318 862	1 789 120	692 432	19 608	356 273
1964	15 204 586	69 120 048	2 216 015	637 963	18 065	339 553
1965	16 552 413	75 247 269	2 271 188	1 490 170	42 197	792 509
1966	16 901 173	76 832 732	2 493 894	2 511 636	71 122	1 221 943
1967	16 594 251	75 437 465	2 542 234	5 677 246	160 763	2 597 143
1968	21 028 105	95 593 765	3 158 571	8 842 987	250 407	4 041 811
1969	20 247 238	92 043 944	3 138 659	9 463 385	267 975	4 435 942
1970	23 228 549	105 596 984	3 450 477	10 890 368	308 383	5 202 303
1971	29 503 652	134 123 602	4 714 548	11 219 460	317 701	5 200 172
1972	28 728 578	130 600 116	5 468 196	11 928 017	337 766	5 497 381
1973	27 538 541	125 190 207	5 703 923	11 441 105	323 978	5 478 710
1974	30 700 392	139 563 982	8 865 002	11 022 062	312 112	6 473 935
1975	29 982 487	136 300 386	10 586 373	9 816 982	277 987	8 684 205
1976	31 694 293	144 082 256	11 802 204	10 850 043	307 241	13 909 626
1977	32 393 659	147 261 574	13 678 557	10 573 917	299 422	16 259 065

[a]Value = cost at plant.

TOTAL METAL MINING: SELECTED ENERGY INPUT STATISTICS, 1961-1977 (Cont'd)

Year	Electricity Purchased (Thousands of KWH)	(Gigajoules)	(Dollars)
1961	1 873 319	6 743 948	11 572 583
1962	1 708 463	6 150 467	11 299 772
1963	1 778 567	6 402 841	11 132 998
1964	1 839 404	6 621 854	11 391 503
1965	1 923 550	6 924 780	11 715 292
1966	1 974 665	7 108 794	11 262 155
1967	2 343 085	8 435 106	12 603 397
1968	2 645 483	9 523 739	14 906 069
1969	2 789 945	10 043 802	17 415 762
1970	3 103 087	11 171 113	19 801 040
1971	3 317 974	11 944 706	22 232 589
1972	3 205 313	11 539 127	22 138 006
1973	3 309 499	11 914 196	25 001 471
1974	3 398 365	12 234 114	29 202 530
1975	3 443 515	12 396 654	33 941 213
1976	3 480 963	12 531 467	41 975 999
1977	3 508 911	12 632 080	55 183 923

GOLD: SELECTED ENERGY INPUT STATISTICS, 1961-1977

Year	Coal and Coke (Short Tons)	Coal and Coke (Tonnes)	Coal and Coke (Dollars)	Gasoline (Imperial Gallons)	Gasoline (Litres)	Gasoline (Dollars)
1961	10 111	9 173	162 858	267 410	1 215 646	107 286
1962	8 236	7 472	137 447	254 614	1 157 475	102 166
1963	7 088	6 430	123 046	226 408	1 029 251	95 890
1964	7 395	6 709	130 560	254 444	1 156 702	105 665
1965	7 190	6 523	126 873	232 262	1 055 863	96 183
1966	6 194	5 619	107 996	209 767	953 601	89 853
1967	5 876	5 331	104 833	173 171	787 235	73 811
1968	4 822	4 374	87 881	125 099	568 700	57 083
1969	4 300	3 901	86 177	157 332	715 231	72 611
1970	3 167	2 873	74 435	132 797	603 695	60 073
1971	1 647	1 494	48 688	68 293	310 460	30 792
1972	276	160	7 722	65 600	298 218	29 572
1973	78	71	2 361	66 476	302 200	32 681
1974	525	476	25 888	78 152	355 279	45 348
1975	95	86	6 109	67 788	308 164	46 557
1976	291	264	19 445	54 731	248 807	41 595
1977	56	51	3 522	55 851	253 899	44 043

GOLD: SELECTED ENERGY INPUT STATISTICS, 1961-1977 (Cont'd)

Year	Fuel Oils (Imperial Gallons)	Fuel Oils (Litres)	Fuel Oils (Dollars)	Natural Gas (Thousands of Cubic Feet)	Natural Gas (Thousands of Cubic Metres)	Natural Gas (Dollars)
1961	605 922	2 754 521	121 700	357 055	10 111	124 744
1962	1 128 943	586 175	226 163	226 606	6 417	135 678
1963	807 901	3 672 718	150 612	247 217	7 000	145 534
1964	780 039	3 546 057	144 746	249 948	7 078	154 473
1965	977 493	4 443 683	184 979	248 572	7 039	147 267
1966	921 594	4 189 566	171 211	200 919	5 689	120 124
1967	886 742	4 031 129	160 108	199 441	5 648	116 530
1968	977 173	4 442 228	169 195	182 856	5 178	109 196
1969	797 860	3 627 072	146 018	145 799	4 129	95 173
1970[a]	893 472	4 061 724	175 526	142 601	4 038	98 460
1971[a]	1 125 851	572 119	196 928	613 496	17 372	85 282
1972[a]	1 130 754	594 408	214 733	618 645	17 518	93 741
1973	1 300 021	1 363 895	289 482	658 659	18 651	98 141
1974	1 031 306	142 317	306 646	114 084	3 231	77 363
1975	1 166 930	758 864	429 126	127 265	3 604	137 535
1976	766 409	3 484 095	328 154	142 734	4 042	200 849
1977	807 270	3 669 849	382 425	207 296	5 870	325 946

[a]The change in the unit cost of gas for these years relative to the years preceding or following is unexplainable at this time. One suggestion as to the discrepancy is that errors were made at the subnational level at the time the data were initially assembled. It is not possible to trace these.

GOLD: SELECTED ENERGY INPUT STATISTICS, 1961-1977 (Cont'd)

	Electricity Purchased		
Year	(Thousands of KWH)	(Gigajoules)	(Dollars)
1961	629 336	2 265 610	3 995 090
1962	618 660	2 227 176	3 922 575
1963	608 220	2 189 592	3 824 966
1964	610 311	2 197 120	3 780 804
1965	581 210	2 092 356	3 651 128
1966	489 452	1 762 027	3 156 658
1967	450 450	1 621 620	2 887 453
1968	401 506	1 445 422	2 587 390
1969	391 621	1 409 836	2 728 173
1970	361 263	1 300 547	2 678 763
1971	327 820	1 180 152	2 643 905
1972	285 487	1 027 753	2 424 021
1973	304 224	1 095 206	2 687 545
1974	298 739	1 075 460	3 054 043
1975	305 384	1 099 382	3 457 547
1976	267 469	962 888	3 545 730
1977	269 594	970 538	4 222 675

IRON: SELECTED ENERGY INPUT STATISTICS, 1961-1977

Year	Coal and Coke (Short Tons)	Coal and Coke (Tonnes)	Coal and Coke (Dollars)	Gasoline (Imperial Gallons)	Gasoline (Litres)	Gasoline (Dollars)
1961	6 552	5 944	73 019	199 598	907 373	64 996
1962	4 195	3 806	51 005	174 792	794 604	49 663
1963	3 962	3 594	46 443	162 175	737 248	53 520
1964	4 362	3 957	48 275	218 364	992 683	64 475
1965	4 472	4 057	50 269	305 393	1 388 317	105 641
1966	4 373	3 967	48 449	324 022	1 473 004	99 267
1967	4 300	3 901	49 767	333 921	1 518 005	118 077
1968	3 266	2 963	39 734	406 395	1 847 472	154 308
1969	2 664	2 417	32 435	423 410	1 924 822	147 239
1970	2 970	2 694	35 745	450 953	2 050 032	157 657
1971	946	858	11 581	449 257	2 042 322	165 839
1972	1 099	997	14 220	466 788	2 122 018	175 559
1973	1 569	1 423	22 461	498 840	2 267 727	192 303
1974	161 223	146 259	2 546 854	482 539	2 193 622	231 600
1975	169 733	153 979	2 763 051	489 507	2 225 299	293 320
1976	253 662	230 118	4 433 898	518 143	2 355 478	335 006
1977	124 616	113 050	2 152 308	522 988	2 377 503	354 479

IRON: SELECTED ENERGY INPUT STATISTICS, 1961-1977 (Cont'd)

Year	Fuel Oils (Imperial Gallons)	Fuel Oils (Litres)	Fuel Oils (Dollars)	Natural Gas (Thousands of Cubic Feet)	Natural Gas (Thousands of Cubic Metres)	Natural Gas (Dollars)
1961	4 711 487	21 418 420	647 072	0	0	0
1962	5 326 247	24 213 119	744 450	0	0	0
1963	5 553 070	25 244 256	769 811	0	0	0
1964	7 754 075	35 250 025	1 041 467	0	0	0
1965	9 769 169	44 410 642	1 223 273	790 891[a]	22 396	431 093
1966	9 067 777	41 222 114	1 288 273	1 764 596	49 968	839 351
1967	9 413 613	42 794 285	1 366 870	4 298 379	121 717	1 887 367
1968	10 303 455	46 839 506	1 507 996	7 336 637	207 750	3 276 235
1969	9 981 655	45 376 604	1 431 390	7 877 690	223 071	3 641 736
1970	10 323 082	46 928 731	1 499 339	8 919 149	252 562	4 135 677
1971	13 365 030	60 757 426	2 172 690	8 389 422	237 562	3 981 346
1972	13 335 396	60 622 710	2 399 080	9 012 769	255 213	4 172 247
1973	13 088 003	59 498 062	2 622 504	8 839 463	250 306	4 258 033
1974	14 863 254	67 568 353	3 856 570	8 609 766	243 801	4 901 205
1975	13 894 569	63 164 711	4 613 892	7 677 278	217 396	6 556 729
1976	14 855 214	67 531 803	5 456 775	8 629 094	244 349	10 811 355
1977	14 090 469	64 055 272	5 907 993	8 422 095	238 487	12 778 269

[a]The start of natural gas inputs to iron mining in 1965 possibly reflects the availability of gas supplies in the region affected due to the extension of pipelines.

IRON: SELECTED ENERGY INPUT STATISTICS, 1961-1977 (Cont'd)

Year	Electricity Purchased (Thousands of KWH)	(Gigajoules)	(Dollars)
1961	208 466	750 478	1 524 484
1962	212 774	765 986	1 596 325
1963	202 783	730 019	1 524 717
1964	272 414	980 690	1 871 140
1965	378 297	1 361 869	2 504 830
1966	459 208	1 653 149	2 650 438
1967	508 554	1 830 794	2 859 987
1968	837 441	3 014 788	4 748 591
1969	923 381	3 324 172	5 645 845
1970	978 608	3 522 989	6 356 329
1971	1 091 432	3 929 155	6 875 084
1972	1 129 029	4 064 504	7 033 784
1973	1 181 190	4 252 284	8 267 861
1974	1 192 630	4 293 468	9 275 198
1975	1 119 210	4 029 156	10 152 421
1976	1 203 071	4 331 056	13 222 330
1977	1 170 493	4 213 775	16 887 415

OTHER METALS: SELECTED ENERGY INPUT STATISTICS, 1961-1977

Year	Coal and Coke (Short Tons)	Coal and Coke (Tonnes)	Coal and Coke (Dollars)	Gasoline (Imperial Gallons)	Gasoline (Litres)	Gasoline (Dollars)
1961	89 695	81 353	1 274 657	390 847	1 776 790	133 164
1962	79 459	72 069	1 173 960	391 566	1 780 059	134 813
1963	72 904	66 124	1 077 786	394 131	1 791 720	136 721
1964	62 261	56 471	952 016	440 036	2 000 404	164 082
1965	41 196	37 365	627 084	450 837	2 049 505	163 643
1966	42 083	38 169	638 770	539 974	2 454 722	189 715
1967	44 460	40 325	714 228	524 967	2 386 500	197 026
1968	44 282	40 164	740 143	510 937	2 322 720	201 109
1969	49 759	45 131	818 375	595 184	2 705 706	236 839
1970	42 406	38 462	740 142	699 926	3 181 864	259 261
1971	24 380	22 113	509 598	717 615	3 262 278	291 027
1972	24 748	22 446	558 321	654 069	2 973 398	267 858
1973	21 958	19 916	505 604	597 981	2 718 422	257 083
1974	23 952	21 724	942 620	618 226	2 810 455	338 859
1975	21 391	19 402	1 294 179	782 143	3 555 622	501 324
1976	17 796	16 141	940 757	923 334	4 197 476	667 494
1977	13 319	12 080	665 352	898 334	4 083 826	681 422

OTHER METALS: SELECTED ENERGY INPUT STATISTICS, 1961-1977 (Cont'd)

Year	Fuel Oils (Imperial Gallons)	Fuel Oils (Litres)	Fuel Oils (Dollars)	Natural Gas (Thousands of Cubic Feet)	Natural Gas (Thousands of Cubic Metres)	Natural Gas (Dollars)
1961	6 451 977	29 330 687	911 998	375 975	10 646	174 386
1962	6 663 752	30 293 417	932 282	398 692	11 290	184 869
1963	6 027 692	27 401 888	868 697	445 215	12 607	210 739
1964	6 670 472	30 323 966	1 029 802	388 015	10 987	185 080
1965	5 805 751	26 392 944	862 936	450 707	12 763	214 149
1966	6 911 802	31 421 052	1 034 410	546 121	15 464	262 468
1967	6 293 896	28 612 051	1 015 256	1 179 426	33 398	593 246
1968	9 747 477	44 312 030	1 481 380	1 323 494	37 477	656 380
1969	9 467 723	43 040 269	1 561 251	1 439 896	40 773	699 033
1970	12 011 995	54 606 529	1 775 612	1 828 618	51 781	968 166
1971	15 012 771	68 248 057	2 344 930	2 216 542	62 765	1 133 544
1972	14 262 428	64 836 998	2 854 383	2 296 603	65 033	1 231 393
1973	13 150 517	59 782 250	2 791 937	1 942 983	55 019	1 122 536
1974	14 805 832	67 307 312	4 701 786	2 298 212	65 078	1 495 367
1975	14 920 988	67 830 811	5 543 361	2 012 439	56 986	1 989 941
1976	16 072 670	73 066 358	6 017 275	2 078 215	58 849	2 897 422
1977	17 495 920	79 536 452	7 388 139	1 944 526	55 063	3 154 850

OTHER METALS: SELECTED ENERGY INPUT STATISTICS, 1961-1977 (Cont'd)

Year	Electricity Purchased (Thousands of KWH)	(Gigajoules)	(Dollars)
1961	1 035 517	3 727 861	6 053 009
1962	877 029	3 157 304	5 780 872
1963	967 564	3 483 230	5 783 315
1964	956 679	3 444 044	5 739 559
1965	964 043	3 470 555	5 559 334
1966	1 026 005	3 693 618	5 455 059
1967	1 384 081	4 982 692	6 855 957
1968	1 406 536	5 063 530	7 570 088
1969	1 474 943	5 309 795	9 041 744
1970	1 763 216	6 347 578	10 765 948
1971	1 898 722	6 835 399	12 713 600
1972	1 790 797	6 446 869	12 680 201
1973	1 824 085	6 566 706	14 046 065
1974	1 906 996	6 865 186	16 873 289
1975	2 018 921	7 268 116	20 331 245
1976	2 010 423	7 237 523	25 207 939
1977	2 068 824	7 447 766	34 073 833

ENERGY INPUT STATISTICS 1945-1961

SOURCE

This section contains quantity and value data for energy inputs used in total metal mining, gold, iron ore and other metal mining industries. Data presented in the tables werre obtained from Information Systems Division, Mineral Policies Sector, Energy Mines and Resources, Ottawa.

METHODS

Quantity and value data cover all categories of energy inputs: coal and coke, gasoline and kerosine, fuel oil, wood, gas, plus electricity purchased.

To present a comparable series for total metal mining between the two periods (i.e. 1945 to 1961 and 1961 to 1977), the figures for energy used in 'total metal mining excluding smelting and refining,' are used for 1945 to 1961). This is done since figures for total metal mining from 1961 to 1977 do not include energy used in smelting and refining activities.

As in the 1961 to 1977 period the data on energy inputs are conceptually identical to the series on cost of fuel and electricity in the section of this compendium on principal statistics. Since all energy inputs are included in the 1945 to 1961 set the aggregate value approximates the total cost of fuel and electricity in each metal mining industry.

TOTAL METAL MINING: SELECTED ENERGY INPUT STATISTICS, 1945-1961

Year	Coal & Coke (Short tons)	Coal & Coke (Tonnes)	Coal & Coke (Dollars)[a]	Gasoline & Kerosene (Imperial Gallons)	Gasoline & Kerosene (Litres)	Gasoline & Kerosene (Dollars)
1945	89 225	80 927	729 848	426 869	387 170	118 804
1946	65 501	59 409	695 251	423 040	383 697	140 777
1947	65 402	59 320	770 295	483 909	438 905	158 937
1948	58 312	52 889	742 246	420 450	381 348	148 141
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	102 936	93 363	1 022 680	554 126	2 519 057	199 728
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	93 268	84 594	2 244 690	1 133 423	5 152 541	431 349
1957	126 133	114 403	1 942 277	1 432 585		564 743
1958	176 166	159 783	2 778 439	1 762 565	8 012 620	584 167
1959	186 868	169 489	2 725 081	1 150 976	5 232 337	438 804
1960	169 042	153 321	2 140 783	1 176 762	5 349 560	423 231
1961	107 177	97 210	1 521 093	960 535	4 366 592	338 662

TOTAL METAL MINING: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Fuel Oil (Imperial Gallons)	Fuel Oil (Litres)	Fuel Oil (Dollars)	Wood[b] (Cords)	Wood[b] (Cubic Metres)	Wood[b] (Dollars)
1945	2 419 472	10 998 920	310 857	13 391	48 542	94 517
1946	2 565 679	11 663 577	347 136	18 058	65 460	133 268
1947	3 445 650	15 663 925	552 667	19 073	69 140	152 487
1948	3 866 484	17 577 036	730 571	17 704	64 177	136 922
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	5 971 827	27 147 926	1 047 630	11 246	40 767	119 712
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	10 848 143	49 315 658	2 069 128	16 336	59 218	207 488
1957	11 685 108	53 120 501	2 068 278	10 271	37 232	112 584
1958	10 239 868	46 550 440	1 692 577	10 055	36 449	106 649
1959	13 103 467	59 568 361	2 081 280	7 695	27 894	91 161
1960	14 202 736	64 565 638	2 197 823	5 677	20 579	68 512
1961	12 370 047	56 234 234	1 821 186	8 450	30 631	52 935

Note: The figures reported are for 'Total Metals excluding Smelting and Refining'. These figures rather than 'Total Metals' figures are used in order to give a series which is consistent with the 1961-1978 data. In this latter series, 'Smelting and Refining' is not included in 'Total Metals'. Smelting and Refining operations are considered to be a manufacturing industry and so can be found in the Annual Census of Manufacturing.

[a] Value = cost at plant.

[b] Wood is measured in cords of 128 cubic feet of piled wood.

[e] For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of fuel input were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

TOTAL METAL MINING: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Gas[c] (Thousands of Cubic Feet)	Gas[c] (Thousands of Cubic Metres)	Gas[c] (Dollars)[a]	Other Fuel[d] (Dollars)	Total Energy Excluding Electricity ($)
1945	-	-	-	12 273	1 266 299
1946	-	-	-	253	1 316 685
1947	-	-	-	4 308	1 638 694
1948	-	-	-	47 791	1 805 671
1949	e	e	e		2 016 838
1950	e	e	e	-	2 173 885
1951	e	e	e	-	2 353 159
1952	e	e	e	-	2 504 934
1953				85 729	2 475 479
1954	e	e	e	-	2 862 550
1955	e	e	e	-	2 911 157
1956				49 397	5 002 052
1957	160	5	91	158 398	4 846 371
1958	152 945	4 331	28 153	127 874	5 317 859
1959	160 574	4 547	32 684	115 180	5 484 190
1960	205 584	5 822	110 514	148 980	5 089 843
1961	1 405 244	39 792	299 130	136 044	4 169 050

TOTAL METAL MINING: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Electricity Purchased (Thousands of KWH)	Electricity Purchased (Gigajoules)	Electricity Purchased (Dollars)	Total Energy Inputs (Dollars)
1945	757 083	2 725 499	3 480 046	4 746 345
1946	783 382	2 820 175	3 755 497	5 072 182
1947	862 781	3 106 012	4 055 514	5 694 208
1948	834 542	3 004 351	3 968 685	5 774 356
1949	803 919	2 894 108	4 123 205	6 140 043
1950	893 848	3 217 853	4 427 347	6 601 232
1951	1 129 601	4 066 564	4 926 975	7 280 134
1952	1 092 762	3 933 943	5 558 763	8 063 697
1953	1 118 758	4 027 529	6 057 674	8 533 153
1954	1 138 956	4 100 242	6 204 108	9 066 658
1955	1 164 547	4 192 369	6 528 220	9 439 377
1956	1 542 553	5 553 191	8 796 811	13 798 863
1957	1 827 978	6 580 721	10 576 812	15 423 183
1958	2 214 653	7 972 751	12 444 487	17 762 346
1959	2 209 331	7 953 592	12 810 414	18 294 604
1960	2 195 747	7 904 689	13 075 723	18 165 566
1961	1 963 904	7 070 054	12 288 539	16 457 589

[c]Gas includes natural gas and 'other manufactured gases' (measured in M.cu.ft. units). 'Liquified petroleum gases' (measured in imperial gallons) are included in 'other fuels'. [d]'Other fuels' includes such types of fuel as charcoal, liquified petroleum gases etc. Since the unit of measurement varies, only a dollar value is given here.

[e]For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of fuel inputs were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

GOLD: SELECTED ENERGY INPUT STATISTICS, 1945-1961

Year	Coal & Coke (Short tons)	Coal & Coke (Tonnes)	Coal & Coke (Dollars)[a]	Gasoline & Kerosene (Imperial Gallons)	Gasoline & Kerosene (Litres)	Gasoline & Kerosene (Dollars)
1945	33 603	30 478	397 851	257 895	1 172 391	72 940
1946	37 683	34 178	453 819	275 941	1 254 428	103 584
1947	39 530	35 854	520 690	288 327	1 310 735	107 704
1948	36 271	32 898	513 069	248 959	1 131 768	98 838
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	24 123	21 880	379 732	244 321	1 110 683	97 232
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	22 152	20 092	330 832	217 086	986 873	91 401
1957	24 890	22 575	370 890	227 402	1 033 769	99 593
1958	21 962	19 920	348 463	258 765	1 176 346	112 019
1959	19 810	17 968	312 744	245 190	1 114 634	105 410
1960	15 760	14 294	254 383	279 718	1 271 598	108 690
1961	10 111	9 171	162 858	277 181	1 260 065	111 234

GOLD: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Fuel Oil (Imperial Gallons)	Fuel Oil (Litres)	Fuel Oil (Dollars)	Wood[b] (Cords)	Wood[b] (Cubic Metres)	Wood[b] (Dollars)
1945	483 976	2 200 155	82 711	13 252	48 039	90 022
1946	757 869	3 445 272	129 641	17 888	64 844	131 940
1947	835 498	3 798 174	182 187	18 882	68 447	150 952
1948	735 097	3 341 751	165 932	17 690	64 126	136 814
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	374 398	1 702 013	89 239	10 204	36 990	109 953
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	439 432	1 997 658	105 305	10 784	39 092	117 007
1957	549 501	2 498 032	129 250	9 452	34 264	103 040
1958	658 586	2 993 932	143 646	8 354	30 283	92 306
1959	602 343	2 738 251	124 362	7 695	27 894	91 161
1960	553 994	2 518 457	110 178	5 164	18 720	63 219
1961	630 377	2 865 694	126 520	3 357	12 169	41 552

[a]Value = cost at plant.
[b]Wood is measured in cords of 128 cubic feet of piled wood.
[e]For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of fuel input were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

GOLD: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Gas[c] (Thousands of Cubic Feet)	Gas[c] (Thousands of Cubic Metres)	Gas[c] (Dollars)[a]	Other Fuel[d] (Dollars)	Total Energy Excluding Electricity ($)
1945	-	-	-	42	643 566
1946	-	-	-	253	819 237
1947	-	-	-	5 000	966 533
1948				280	914 933
1949	e	e	e	e	913 417
1950	e	e	e	e	1 022 837
1951	e	e	e	e	974 499
1952	e	e	e	e	923 643
1953	-	-	-	43 893	720 049
1954	e	e	e	e	715 370
1955	e	e	e	e	667 461
1956	-	-	-	37 225	681 770
1957	-	-	-	33 064	735 837
1958	-	-	-	37 595	734 029
1959	59 814	1 693	32 190	4 104	669 971
1960	137 601	3 895	79 900	65 020	681 390
1961	357 055	10 111	124 744	59 793	626 701

GOLD: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Electricity Purchased (Thousands of KWH)	Electricity Purchased (Gigajoules)	Electricity Purchased (Dollars)	Total Energy Inputs (Dollars)
1945	501 110	1 803 996	2 584 971	3 228 537
1946	554 426	1 995 934	2 850 756	3 669 993
1947	595 409	2 143 472	3 057 562	4 024 095
1948	569 928	2 051 741	2 986 495	3 901 428
1949	573 884	2 065 982	3 202 329	4 115 746
1950	648 067	2 333 041	3 380 697	4 403 534
1951	800 154	2 880 554	3 434 662	4 409 161
1952	657 033	2 365 319	3 395 033	4 318 676
1953	538 079	1 937 084	3 036 735	3 756 784
1954	590 139	2 124 500	3 126 958	3 842 328
1955	622 860	2 242 296	3 379 843	4 047 304
1956	580 624	2 090 246	3 306 511	3 988 281
1957	582 715	2 097 774	3 326 642	4 062 479
1958	611 765	2 202 354	3 555 171	4 289 200
1959	618 295	2 225 862	3 593 557	4 263 528
1960	634 813	2 285 327	3 756 802	4 438 198
1961	631 301	2 272 684	4 016 413	4 643 114

[c]Gas includes natural gas and 'other manufactured gases' (measured in M.cu.ft. units). 'Liquified petroleum gases' (measured in imperial gallons) are included in 'other fuels'.
[d]'Other fuels' includes such types of fuel as charcoal, liquified petroleum gases etc. Since the unit of measurement varies, only a dollar value is given here.
[e]For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of fuel input were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

IRON: SELECTED ENERGY INPUT STATISTICS, 1945-1961

Year	Coal & Coke (Short tons)	Coal & Coke (Tonnes)	Coal & Coke (Dollars)[a]	Gasoline & Kerosene (Imperial Gallons)	Gasoline & Kerosene (Litres)	Gasoline & Kerosene (Dollars)
1945	31 850	28 888	118 613	138 053	627 589	36 533
1946	2 958	2 683	32 464	83 163	378 059	20 351
1947	3 468	3 145	43 095	125 838	572 060	32 020
1948	3 647	3 308	46 864	99 948	454 364	28 211
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	59 109	53 612	384 022	179 127	814 311	52 468
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	20 301	18 413	512 611	256 471	1 165 917	98 289
1957	5 573	5 055	60 897	252 760	1 149 047	117 374
1958	9 294	8 430	108 907	295 410	1 342 934	111 059
1959	6 576	5 964	64 235	290 628	1 321 195	110 620
1960	6 132	5 562	66 095	418 615	1 903 024	148 418
1961	6 552	5 943	73 019	240 013	1 091 099	79 620

IRON: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Fuel Oil (Imperial Gallons)	Fuel Oil (Litres)	Fuel Oil (Dollars)	Wood[b] (Cords)	Wood[b] (Cubic Metres)	Wood[b] (Dollars)
1945	876 745	3 985 683	115 139	280	1 015	2 516
1946	1 044 220	4 747 024	135 811	40	145	440
1947	1 171 670	5 326 412	179 257	75	272	300
1948	1 349 656	6 135 536	287 472			
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	3 157 622	14 354 550	612 074			
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	4 378 974	19 906 816	810 321	-	-	-
1957	3 794 912	17 251 670	655 811	-	-	-
1958	3 671 543	16 690 834	565 243	-	-	-
1959	3 906 577	17 759 299	642 704	-	-	-
1960	4 868 356	22 131 546	764 539	440	1 595	4 400
1961	4 941 085	22 462 172	698 968	5 084	18 430	22 241

[a]Value = cost at plant.
[b]Wood is measured in cords of 128 cubic feet of piled wood.
[e]For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of fuel input were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

IRON: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Gas[c] (Thousands of Cubic Feet)	Gas[c] (Thousands of Cubic Metres)	Gas[c] (Dollars)[a]	Other Fuel[d] (Dollars)	Total Energy Excluding Electricity ($)
1945	-	-	-	-	272 801
1946	-	-	-	-	189 066
1947	-	-	-	-	254 662
1948	-	-	-	-	362 547
1949	e	e	e	e	550 719
1950	e	e	e	e	646 148
1951	e	e	e	e	751 717
1952	e	e	e	e	825 618
1953	-	-	-	22	1 048 586
1954	e	e	e	e	938 370
1955	e	e	e	e	1 055 593
1956	-	-	-	4 038	1 425 259
1957	-	-	-	4 698	838 780
1958	864	24	604	4 580	790 393
1959	-	-	-	6 822	824 381
1960	-	-	-	11 013	994 465
1961	-	-	-	7 031	869 879

IRON: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Electricity Purchased (Thousands of KWH)	Electricity Purchased (Gigajoules)	Electricity Purchased (Dollars)	Total Energy Inputs (Dollars)
1945	110 495	397 782	436 597	709 398
1946	102 177	367 837	486 963	676 029
1947	100 264	360 950	424 420	679 082
1948	107 663	387 587	436 191	798 738
1949	59 909	215 672	302 775	853 494
1950	69 667	250 801	408 448	1 054 596
1951	88 220	317 592	514 231	1 265 948
1952	120 654	434 354	760 920	1 586 538
1953	172 896	622 426	1 198 497	2 247 083
1954	159 593	574 535	1 095 824	2 034 194
1955	122 538	441 137	846 487	1 902 080
1956	486 285	1 750 626	2 953 337	4 378 596
1957	493 091	1 775 128	2 930 174	3 768 954
1958	480 928	1 731 341	2 912 528	3 702 921
1959	503 310	1 811 916	3 130 051	3 954 432
1960	377 635	1 359 486	2 647 003	3 641 468
1961	299 673	1 078 823	2 233 039	3 102 918

[c]Gas includes natural gas and 'other manufactured gases' (measured in M.cu.ft. units). 'Liquified petroleum gases' (measured in imperial gallons) are included in 'other fuels'.
[d]'Other fuels' includes such types of fuel as charcoal, liquified petroleum gases etc. Since the unit of measurement varies, only a dollar value is given here.
[e]For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of tuel input were not

OTHER METALS: SELECTED ENERGY INPUT STATISTICS, 1945-1961

Year	Coal & Coke (Short tons)	(Tonnes)	(Dollars)[a]	Gasoline & Kerosene (Imperial Gallons)	(Litres)	(Dollars)
1945	23 772	21 561	213 384	30 921	140 567	9 331
1946	24 860	22 548	208 968	63 936	290 653	16 342
1947	22 404	20 320	206 510	69 744	317 056	19 223
1948	18 394	16 683	182 313	71 543	325 234	21 092
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	19 704		258 926	130 678		50 028
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	50 815	46 089	1 401 247	659 866	2 999 751	241 659
1957	95 670	86 773	1 510 490	952 423	4 329 715	347 776
1958	144 910	131 433	2 321 069	1 208 390	5 493 341	361 089
1959	160 482	145 557	2 348 102	615 158	2 796 508	222 774
1960	147 150	133 465	1 820 305	478 429	2 174 938	166 123
1961	90 514	82 096	1 285 216	443 341	2 015 428	147 808

OTHER METALS: SELECTED ENERGY INPUT STATISTICS, 1945-1961

Year	Fuel Oil (Imperial Gallons)	(Litres)	(Dollars)	Wood[b] (Cords)	(Cubic Metres)	(Dollars)
1945	1 058 751	4 813 082	113 007	399	1 446	1 999
1946	763 590	3 471 280	81 684	130	471	888
1947	1 438 482	6 539 339	191 223	116	421	1 235
1948	1 781 731	8 099 749	277 167	14	51	108
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	2 439 807		346 317	1 042		9 759
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	6 029 737	27 411 184	1 153 502	5 552	20 126	90 481
1957	7 340 695	33 370 799	1 283 217	819	2 969	9 544
1958	5 909 739	26 865 673	983 688	1 701	6 166	14 343
1959	8 594 547	39 070 811	1 314 214	-	-	-
1960	8 780 386	39 915 635	1 323 106	73	265	893
1961	6 798 585	30 906 367	995 698	9	33	142

Note: Figures for 'Other Metals' are obtained by subtracting the sum of the figure for Gold and Iron from the corresponding figures for 'Other Metal Mines.'

[a]Value = cost at plant.

[b]Wood is measured in cords of 128 cubic feet of piled wood.

[e]For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of fuel input were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

OTHER METALS: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Gas[c] (Thousands of Cubic Feet)	Gas[c] (Thousands of Cubic Metres)	Gas[c] (Dollars)[a]	Other Fuel[d] (Dollars)	Total Energy Excluding Electricity ($)
1945	-	-	-	12 231	349 952
1946	-	-	-	-	307 882
1947	-	-	-	-	418 191
1948	-	-	-	47 511	528 191
1949	e	e	e	e	552 702
1950	e	e	e	e	504 900
1951	e	e	e	e	626 943
1952	e	e	e	e	755 673
1953	-	-	-	41 814	706 844
1954	e	e	e	e	1 208 810
1955	e	e	e	e	1 188 103
1956	-	-	-	8 134	2 895 023
1957	-	-	-	120 636	3 271 663
1958	152 081	4 305	27 549	85 699	3 793 437
1959	760	22	494	104 254	3 989 838
1960	67 983	1 925	30 614	72 947	3 413 988
1961	375 975	10 644	174 386	69 220	2 672 470

OTHER METALS: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Electricity Purchased (Thousands of KWH)	Electricity Purchased (Gigajoules)	Electricity Purchased (Dollars)	Total Energy Inputs (Dollars)
1945	145 476	523 714	458 478	808 285
1946	126 778	456 401	417 768	726 160
1947	167 107	601 585	573 532	995 866
1948	156 950	565 020	545 999	1 072 320
1949	170 125	612 450	618 101	1 170 803
1950	176 113	634 007	638 202	1 143 102
1951	241 226	868 414	978 082	1 605 025
1952	315 074	1 134 266	1 402 810	2 158 483
1953	407 782	1 468 015	1 822 442	2 529 286
1954	389 224	1 401 206	1 981 326	3 190 136
1955	419 147	1 508 929	2 301 890	3 489 993
1956	475 643	1 712 315	2 536 963	5 431 986
1957	752 171	2 707 816	4 319 996	7 591 750
1958	1 121 960	4 039 056	5 976 788	9 770 225
1959	1 087 725	3 915 810	6 086 806	10 076 644
1960	1 183 298	4 259 873	6 671 918	10 085 900
1961	1 032 930	3 718 548	6 039 087	8 711 557

[c]Gas includes natural gas and 'other manufactured gases' (measured in M.cu.ft. units). 'Liquified petroleum gases' (measured in imperial gallons) are included in 'other fuels'.
[d]'Other fuels' includes such types of fuel as charcoal, liquified petroleum gases etc. Since the unit of measurement varies, only a dollar value is given here.
[e]For years 1949 to 1952 (inclusive), 1954 and 1955 details for types of fuel inputs were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

SMELTING AND REFINING

SOURCE

(a) 1961-1977
No published material was available for this industry on a provincial basis.

(b) 1945-1961
Information Systems Division, Mineral Policy Sector, Energy Mines and Resources, Ottawa.

INDUSTRY CLASSIFICATION

From 1945 to 1961 smelting and refining was classified as a mining activity by Statistics Canada.

THE DATA SERIES

This section contains quantity and value data for energy input used in smelting and refining

CONCEPTS AND DEFINITIONS

For a detailed outline of definitions and concepts refer to 'Energy Input Statistics, 1945-1961.'

SMELTING AND REFINING: SELECTED ENERGY INPUT STATISTICS, 1945-1961

Year	Coal & Coke (Short tons)	Coal & Coke (Tonnes)	Coal & Coke (Dollars)[a]	Gasoline & Kerosene (Imperial Gallons)	Gasoline & Kerosene (Litres)	Gasoline & Kerosene (Dollars)
1945	765 765	694 549	7 479 773	85 868	390 356	20 413
1946	574 311	520 900	5 495 128	86 813	394 652	24 072
1947	781 756	709 053	7 884 321	113 435	515 676	31 275
1948	960 073	870 786	9 269 758	135 109	614 206	34 543
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	778 081	705 719	10 579 967	274 640	1 248 513	78 178
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	830 087	752 889	11 408 226	152 964	695 374	45 569
1957	764 750	693 628	10 995 303	149 335	678 877	46 159
1958	503 070	456 284	7 705 617	132 044	600 272	41 411
1959	745 065	675 774	11 664 254	157 961	718 091	46 514
1960	766 840	695 524	11 541 192	148 669	675 849	44 922
1961	678 908	615 770	10 505 843	149 740	680 718	44 622

SMELTING AND REFINING: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Fuel Oil (Imperial Gallons)	Fuel Oil (Litres)	Fuel Oil (Dollars)	Wood[b] (Cords)	Wood[b] (Cubic Metres)	Wood[b] (Dollars)
1945	15 745 624	71 579 607	1 011 438	142	515	1 304
1946	12 180 550	55 372 780	779 829	143	518	1 514
1947	15 079 151	68 549 820	1 096 430	220	798	1 942
1948	15 237 874	69 271 375	1 416 639	638	2 313	9 454
1949	e	e	e	e	e	e
1950	e	e	e	e	e	e
1951	e	e	e	e	e	e
1952	e	e	e	e	e	e
1953	20 282 641	92 204 886	2 251 890	-		-
1954	e	e	e	e	e	e
1955	e	e	e	e	e	e
1956	26 549 755	120 695 186	3 200 224			
1957	32 621 859	146 662 411	4 082 081			
1958	21 949 803	99 783 804	2 596 390	-	-	-
1959	21 054 480	95 713 666	2 247 628	-	-	-
1960	13 357 481	60 723 109	1 359 782	-	-	-
1961	12 857 863	58 451 845	1 277 788	-	-	-

[a]Value = cost at plant.
[b]Wood is measured in cords of 128 cubic feet of piled wood.
[e]For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of fuel input were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

SMELTING AND REFINING: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Gas[c] (Thousands of Cubic Feet)	Gas[c] (Thousands of Cubic Metres)	Gas[c] (Dollars)[a]	Other Fuel[d] (Dollars)	Total Energy Excluding Electricity ($)
1945	437		430	25 413	8 538 771
1946	422		321	23 829	6 324 693
1947	439		374	24 977	9 039 319
1948	290		290	14 605	10 745 289
1949	e	e	e	e	10 987 372
1950	e	e	e	e	11 694 965
1951	e	e	e	e	12 436 100
1952	e	e	e	e	13 227 060
1953	271	8	387	10 351	12 920 673
1954	e	e	e	e	14 053 714
1955	e	e	e	e	13 051 832
1956	427	12	595	23 020	14 677 634
1957	7 092	201	964	33 947	15 158 454
1958	2 613	74	2 756	21 225	10 367 399
1959	2 078 431	58 840	920 644	24 116	14 903 156
1960	4 430 145	125 417	1 912 410	24 076	14 882 382
1961	6 076 753	172 033	2 523 273	25 301	14 376 827

SMELTING AND REFINING: SELECTED ENERGY INPUT STATISTICS, 1945-1961 (Cont'd)

Year	Electricity Purchased (Thousands of KWH)	Electricity Purchased (Gigajoules)	Electricity Purchased (Dollars)	Total Energy Inputs (Dollars)
1945	776 409	2 795 072	2 249 435	10 788 206
1946	581 574	2 093 666	1 684 856	8 009 543
1947	684 783	2 465 219	1 967 062	11 002 735
1948	737 387	2 654 593	2 265 187	13 010 476
1949	721 943	2 598 995	2 337 534	13 324 906
1950	773 659	2 785 172	2 491 017	14 185 982
1951	863 179	3 107 444	3 115 858	15 551 958
1952	891 640	3 209 904	3 441 904	16 668 964
1953	880 481	3 169 732	3 920 097	16 840 770
1954	986 319	3 550 748	4 130 322	18 184 036
1955	1 019 005	3 668 418	4 521 422	17 573 254
1956	1 072 264	3 860 150	4 909 504	19 587 138
1957	1 155 682	4 160 455	5 320 441	20 478 895
1958	2 101 763	7 566 347	4 205 956	14 573 354
1959	1 110 364	3 997 310	5 288 905	20 192 061
1960	1 193 147	4 295 329	5 772 566	20 654 948
1961	1 192 316	4 292 338	6 097 320	20 474 147

[a]Value = cost at plant.
[c]Gas includes natural gas and 'other manufactured gases' (measured in M.cu.ft. units). 'Liquified petroleum gases' (measured in imperial gallons) are included in 'other fuels'.
[d]'Other fuels' includes such types of fuel as charcoal, liquified petroleum gases etc. Since the unit of measurement varies, only a dollar value is given here.
[e]For years 1949 to 1952 (inclusive), 1954 and 1955, details for types of fuel input were not given. A value figure is given for these years for all fuel inputs. A quantity figure is not available.

CAPITAL, REPAIR AND EXPLORATION EXPENDITURES

SOURCES

The data presented in the tables in this section were obtained from the Capital Expenditures Section, Construction Division, Statistics Canada. These data differently organized and aggregated for the total Ontario mining industry are published regularly in Statistics Canada, Private and Public Investment in Canada (61-205, 61-206) and occasionally in Investment Statistics (61-007).

INDUSTRY CLASSIFICATION

Capital, Repair and Exploration Expenditures covers total metal mining as defined according to the 1960 Standard Industrial Classification. The SIC number for total metal mining is (05).

Annual Survey

The data for Private and Public Investment in Canada and Investment Statistics publications are collected on the same questionnaire, 'Annual Survey on Exploration, Development, Capital and Repair Expenditures, Mining and Exploration Companies'. Data on capital and repair expenditures are available by mining industry in Ontario dating back to 1956. (Canadian data series, by industry, start in 1926.) It was only with the 1968 'Annual Survey', however, that expenditures on off-property or general, exploration were requested by Statistics Canada.

The 'Annual Survey' is used to obtain data on final, or realized expenditures for the survey year. In addition, the Construction Division of Statistics Canada conducts two other surveys annually on capital expenditures. These are reports on 'Exploration, Development and Capital Expenditures by Mining and Exploration Compnies, Mid-Year Forecast' and 'Exploration, Development and Capital and Repair Expenditures by Mining and Exploration Companies, Preliminary Estimate and Forecast'. The mid-year forecast is for the survey year, and the report is to be filed with Statistics Canada in June of the survey year. The preliminary estimate is for the survey year and the forecast for the year following. The target date for submitting the returns is the late December of the survey year. Industry data collected in these surveys are published in Private and Public Investment in Canada.

The data in the tables are from the 'Annual Survey'.

Definitions

Capital Expenditures

Capital expenditures include the cost of acquiring, constructing and installing new durable plant, machinery and equipment. Companies are requested to report as capital expenditure all purchases charged to the fixed assets account. Included are all capitalized costs such as architectural, legal and engineering fees, and the value of work on capital assets performed by the firm with their own labour force.

Expenditures are for new capital goods. Excluded are expenditures for used machinery and equipment unless imported, and the acquisition of land and previously-existing structures, since these types of outlay involve only the transfer of property not the creation of a capital asset. Capital expenditure totals record gross outlays, with no deductions for scrap or trade-in value realized from the disposal of old assets.

Repair Expenditures

These outlays represent non-capitalized expenditures made to maintain the operating efficiency of the existing stock of physical assets. Costs incurred for the routine maintenance of plant, machinery and equipment are excluded. But major repairs which materially lengthen the expected serviceable life of an asset or raise its productivity are treated as capital expenditures.

Capital Construction Expenditures

In the 'Annual Survey', capital construction expenditures for mining are collected under two main groupings: mine exploration and development, and structures.

On mine properties, exploration expenditures are outlays incurred in the search for new orebodies. Development expenditures consist of costs for delimiting and preparing known orebodies for production.

Capital expenditures on structures include: mine production, service and other buildings; mine shafts and all other engineering construction; and, in addition to mine shafts, construction of underground facilities not already included in the amounts reported in mine exploration and development.

Capital Machinery and Equipment Expenditures

This category incorporates expenditure on all capital assets used to produce either goods or services, and includes items such as industrial machinery, transportation equipment, and office and store furnishings and equipment.

Off-Property Exploration

This includes explortion expenditures incurred other than on producting properties or on properties being prepared for production.

METHODS

The industry totals are based almost entirely on data provided by respondents. Sometimes estimates have to be made where a final report has not been received from a specific company. In such cases, a number of procedures can be used to derive an estimate. One approach should be mentioned in particular. This is the utilization of data that may have been submitted by the company concerned on a companion survey conducted to obtain preliminary annual estimates for the survey year and forecasts for the year following.

INDUSTRY DATA AVAILABILITY

Confidentiality restrictions impose limits on the extent of industry-expenditure data combinations that are available for the Ontario mining industry. The tables represent the highest order of disaggregation that can be published.

CAPITAL AND REPAIR EXPENDITURES, TOTAL METAL MINING, ONTARIO, 1956-1979
(Millions of Dollars)

	Expenditure						
	Capital			Repair			
Year	Construction	Machinery and Equipment	Total	Construction	Machinery and Equipment	Total	Total Capital and Repair
1956	97.9	58.5	156.4	4.2	17.5	21.7	178.1
1957	136.4	94.2	230.6	4.4	20.0	24.4	255.0
1958	37.5	34.0	71.5	6.0	24.2	30.2	101.7
1959	21.2	16.2	37.4	7.4	23.9	31.3	68.7
1960	18.3	16.7	35.0	6.9	21.9	28.8	63.8
1961	15.9	11.9	27.8	5.0	24.7	29.7	57.5
1962	16.9	11.3	28.2	4.9	24.8	29.7	57.9
1963	23.1	17.7	40.8	7.6	26.3	33.9	74.7
1964	16.8	22.2	39.0	8.8	30.4	39.2	78.2
1965	36.2	28.0	64.2	10.0	33.9	43.9	108.1
1966	117.0	56.8	173.8	10.9	38.9	49.8	223.6
1967	104.1	60.7	164.8	15.7	43.2	58.9	223.7
1968	90.1	39.1	129.2	24.8	62.0	86.8	216.0
1969	73.7	37.0	110.7	19.6	64.5	84.1	194.8
1970	122.0	67.7	189.7	16.5	104.0	120.5	310.2
1971	123.1	83.4	206.5	18.0	106.5	124.5	331.0
1972	82.4	69.1	151.5	7.5	107.8	115.3	266.8
1973	83.2	32.9	116.1	18.7	98.7	117.4	233.5
1974	113.6	49.7	163.3	16.4	103.9	120.3	283.6
1975	154.2	64.4	218.6	23.7	124.4	148.1	366.7
1976	192.3	89.7	282.0	24.8	157.4	182.2	464.2
1977	185.1	80.8	265.9	23.3	171.9	195.2	461.1
1978	174.1	66.0	240.1	17.1	148.1	165.2	405.3
1979	221.3	105.4	326.7	21.6	188.1	209.7	536.4

CAPITAL, REPAIR AND EXPLORATION EXPENDITURES[a] BY MINING AND EXPLORATION COMPANIES, ONTARIO, 1968-1978
(Millions of Dollars)

Year	Capital Expenditure					
	Construction					
	On Property Exploration	On Property Development	Structures	Sub-Total	Machinery and Equipment	Total Capital
1968	7.5	44.8	39.7	92.0	48.5	140.5
1969	9.6	51.1	16.3	77.0	50.2	127.2
1970	10.7	70.8	42.6	124.1	79.6	203.7
1971	8.7	72.5	43.5	124.7	92.6	217.3
1972	5.9	55.7	24.6	86.5	79.0	165.5
1973	6.9	70.6	13.3	90.8	45.8	136.6
1974	7.1	73.2	44.6	124.9	70.9	195.8
1975	8.3	98.4	52.6	159.3	84.6	243.9
1976	10.0	120.9	67.2	198.1	112.1	310.2
1977	10.2	125.8	52.0	188.0	96.1	284.1
1978	7.9	100.2	21.0	129.1	77.2	206.3

[a]These figures do not include outlays in the petroleum and natural gas industry, nor for smelting and refining (included in manufacturing industry). Figures are not available prior to 1968.

CAPITAL, REPAIR AND EXPLORATION EXPENDITURES[a] BY MINING AND EXPLORATION COMPANIES, ONTARIO, 1968-1978
(Millions of Dollars) (Cont'd)

Year	Repair Expenditure			Total Expenditure Capital and Repair	Exploration Outside or General[b]	Land and Mining Rights
	Construction	Machinery & Equipment	Total Repair			
1968	c	c	c	c	18.0	-
1969	21.0	76.0	97.0	224.2	22.6	-
1970	17.5	118.4	135.9	339.6	32.2	0.5
1971	19.0	121.1	140.1	357.4	21.3	2.4
1972	8.0	122.4	130.4	295.9	15.3	1.7
1973	19.2	115.6	134.8	271.4	18.5	2.5
1974	17.3	122.7	140.0	335.8	19.6	3.1
1975	25.3	141.0	166.3	410.2	23.3	d
1976	26.9	182.6	209.5	519.7	24.6	d
1977	24.8	194.3	219.1	503.2	30.1	1.6
1978	18.6	168.9	187.5	393.8	21.0	d

[a]These figures do not include outlays in the petroleum and natural gas industry, nor for smelting and refining (included in manufacturing industry).
Figures are not available prior to 1968.
[b]The totals for exploration and development include only field expenditures on physical work and surveys.
[c]Figures are not available for repair for 1968.
[d]The data pertaining to the purchase of land and mining rights are not shown for certain years because of the confidentiality clause of the Statistics Act.

GENERAL NOTES ON EXPLORATION STATISTICS

SOURCES

Ontario, Department (Bureau) of Mines, Annual Reports; Ontario, Ministry of Natural Resources, Statistical Reports on the Mineral Industry of Ontario; Dominion Bureau of Statistics, Annual Reports on the Mineral Production of Canada (26-201); Statistics Canada, Contract Drilling for Petroleum and Other Contract Drilling (26-207).

CONCEPTS AND DEFINITIONS

Mining Claims

Provision for the staking and registering of mining claims was implemented by the Ontario government in 1897. Since then, the standard size of a mining claim has been 40 acres.

Miners' Licences

Miners' licences were first issued in 1897. Licences have been issued either in the field at the offices of the mining districts, or, in instances where claims are not located within an established mining division or when mining division offices are closed, at the Ministry office in Toronto.

Mining Land Sales and Leases

A consistent set of data appears to exist for mining land sales since 1891. Before 1891, sales of mining lands were stipulated as being located in unsurveyed territory only. Data on leases of mining lands begin in 1891.

The data for sales and leases are on a fiscal-year basis, in contrast to the other indicators of exploration activity which are for the calendar year. The fiscal year of Ontario has undergone two changes since 1908, as shown below:

1891-1908:	the calendar year;
1909/10 to 1933/34:	1 November - 31 October;
1935/36 to the present (1979):	1 April - 31 March.

As a result of the changes in the fiscal year, there are variations in the meaning of the time-period coverage by year in the data between the two sub-periods beginning with 1909. These are identified in footnotes to the table.

Publication of data on mining lands sales and leases was discontinued after 1943.

Contract Drilling

The first year of published data on contract drilling is 1936. No data were published for 1937, however. From the outset, each of the individual series in contract drilling appears to be conceptually consistent over time, except that the number of employees for 1939 includes part-time employees.

It was not until 1961 that the distinction (an important distinction in providing an indicator of exploration activity) was made between surface and underground footage drilled. Until 1961 only the total footage drilled was given.

The data for contract drilling should be treated with some reservation. They are probably incomplete because, among other reasons, the operators are numerous and geographically far-flung, working in isolated areas. Consequently, this may result in less than full coverage of the population of contract drillers.

MINING CLAIMS RECORDED AND CANCELLED, 1897-1977

Year	Recorded	Cancelled[a]
1897	225	-
1898	266	-
1899	215	-
1900	452	-
1901	164	-
1902	126	-
1903	97	-
1904	70	-
1905	-	-
1906	483	-
1907	13 996	-
1908	4 634	-
1909	9 746	-
1910	5 792	-
1911	9 001	361
1912	3 104	-
1913	4 320	442
1914	1 913	7 913
1915	2 519	1 093
1916	2 470	1 911
1917	1 936	602
1918	1 534	304
1919	2 918	1 481
1920	2 160	2 203
1921	2 459	1 791
1922	5 686	1 490
1923	6 092	2 328
1924	5 222	2 804
1925	4 751	2 460
1926	13 496	5 322
1927	15 554	5 537
1928	15 046	3 662
1929	8 207	8 090
1930	3 886	8 887
1931	5 779	10 885
1932	4 945	15 425
1933	8 077	4 813
1934	16 888	5 041
1935	9 460	9 240
1936	17 280	6 653
1937	15 292	
1938	9 047	8 978
1939	6 772	9 086
1940	4 667	7 242
1941	4 254	10 514
1942	3 593	9 028
1943	5 232	3 057
1944	12 527	2 376
1945	16 362	3 657
1946	23 763	6 003
1947	12 913	18 116
1948	9 029	13 932
1949	14 420	11 829
1950	14 233	17 735
1951	13 403	9 265
1952	16 009	13 789
1953	29 019	18 178
1954	50 176	21 777
1955	57 367	41 578
1956	47 997	45 940
1957	30 947	54 332
1958	23 980	39 548
1959	26 031	26 395
1960	18 474	30 717
1961	16 623	21 701
1962	17 157	18 917
1963	17 407	17 247
1964	51 547	15 545
1965	38 757	28 500
1966	39 097	42 726
1967	32 271	39 693
1968	38 705	31 629
1969	45 852	31 621
1970	40 693	36 867
1971	24 410	42 501
1972	19 267	37 753
1973	18 170	30 164
1974	22 097	18 285
1975	19 761	23 016
1976	19 618	18 652
1977	14 346	20 378

[a]The cancellation of claims in Eastern Ontario and the Parry Sound district is included for the years 1951 to 1974 only.

MINERS' LICENCES ISSUED, 1897-1977[a]

Year	New	Renewals	New and Renewals
1897	250	0	250
1898	134[b]	69	203
1899	c	c	252
1900	c	c	271
1901	c	c	187
1902			132
1903	c	c	103
1904	c	c	89
1905	-	-	-
1906	c	c	536
1907	c	c	11 473
1908	c	c	5 923
1909	7 413	4 676	12 089
1910	4 277	5 585	9 862
1911	3 816	4 647	8 463
1912	2 030	4 815	6 845[d]
1913	2 251	3 139	5 390
1914	1 188	3 206	4 394
1915	-	-	-
1916	201	346	607
1917	-	-	-
1918	1 013	2 006	3 019
1919	1 854	2 262	4 116
1920	1 461	2 883	4 344
1921	1 481	2 113	3 594
1922	3 247	3 101	6 348
1923	2 844	3 704	6 548
1924	2 676	4 466	7 142
1925	2 391	4 439	6 830
1926	6 631	5 521	12 152
1927	6 923	7 221	14 144
1928	6 059	8 688	14 747
1929	3 271	8 049	11 320
1930	1 554	5 885	7 439
1931	2 194	4 808	6 982
1932	2 035	3 670	5 705
1933	3 365	3 911	7 276
1934	7 409	4 757	12 166
1935	3 335	5 113	8 448
1936	7 170	5 961	13 131
1937	5 511	8 344	13 855
1938	3 445	6 224	9 669
1939	2 096	5 617	7 713
1940	1 000	4 470	5 470
1941	1 009	3 225	4 234
1942	1 178	3 224	4 402
1943	1 341	2 073	3 414
1944	2 734	2 873	5 607
1945	3 275	3 821	7 096
1946	3 876	5 176	9 052
1947	2 072	5 127	7 199
1948	1 817	4 199	6 016
1949	3 247	4 043	7 290
1950	2 295	3 993	6 288
1951	2 386	3 858	6 244
1952	2 323	4 747	7 070
1953	5 213	4 133	9 346
1954	8 736	6 277	15 013[d]
1955	8 673	7 177	15 850
1956	5 079	7 195	12 274
1957	3 300	5 978	9 278
1958	2 449	4 595	7 044
1959	2 321	4 251	6 572
1960	1 893	3 862	5 755
1961	1 796	3 663	5 459
1962	1 788	3 486	5 274
1963	1 824	3 332	5 156
1964	4 879	3 411	8 290
1965	2 925	5 010	7 935
1966	2 863	4 765	7 628
1967	1 882	4 313	6 195
1968	e	e	6 135
1969	e	e	5 115
1970	e	e	4 651
1971	e	e	4 502
1972	e	e	4 194
1973	1 287	2 601	3 888
1974	1 252	2 518	3 770
1975	1 111	2 332	3 443
1976	1 066	2 250	3 316
1977	972	2 158	3 130

MINERS' LICENCES ISSUED, 1897-1977[a]

[a]Data for the earlier years of these series are patchy in that the mining licences issued through some of the offices are not included. The data exclusions, with their accompanying dates, are as follows;

1906: Temiskaming Mining Division (established 1905) and Toronto office;
1907: Parry Sound; Larder Lake Mining Division (established 1907); Toronto office;
1908: Sudbury and Toronto office;
1909: Toronto office;
1910: Parry Sound and Toronto office;
1911-14,
1918-19,
1921: Toronto office;
1916: Includes Parry Sound and Sudbury only.

[b]Derived residually.

[c]Figures available only for newly-issued and renewed licences combined for 1899-1904 and 1906-1908.

[d]The total number of licences issued and renewed is not contained in the source documents for 1911-21 and 1954-66.

[e]Figures for new issues and for renewals were not published for 1968-72.

MINING LAND SALES AND LAND LEASES, 1891-1943
(Acres)

Year	Sales	Leases
1891	59 389	4 998
1892	6 200	13 122
1893	4 370	13 047
1894	3 271	7 050
1895	7 720	15 084
1896	10 734	13 224
1897	29 794	86 014
1898	19 529	48 911
1899	35 049	63 258
1900	30 972	28 127
1901	11 302	28 699
1902	3 985	25 549
1903	6 437	33 427
1904	3 440	11 002
1905	3 144	19 914
1906	4 877	13 384
1907	9 310	8 194
1908	7 559	4 918
1909[a]	10 709	3 296
1910[b]	17 276	9 029
1911	27 924	10 292
1912	19 333	16 712
1913	34 375	9 313
1914	17 384	5 838
1915	17 278	2 092
1916	14 592	5 858
1917	20 154	4 962
1918	12 126	3 119
1919	10 600	2 137
1920	15 406	5 678
1921	11 186	5 196
1922	13 320	12 011
1923	13 004	6 806
1924	14 280	7 735
1925	16 657	5 251
1926	12 730	6 031
1927	21 913	5 535
1928	28 189	3 660
1929	27 713	3 100
1930	15 012	4 610
1931	10 948	3 944
1932	8 619	4 229
1933	14 139	4 524
1934	15 786	5 208
1935[c]	19 039	4 098
1936	13 700	8 798
1937	31 197	10 804
1938	22 704	10 815
1939	28 112	15 709
1940	22 521	7 644
1941	30 128	3 099
1942	17 092	2 868
1943	15 736	791

[a]Ten months, 1 January to 31 October.
[b]1910-34: fiscal year 1 November - 31 October.

[c]1935-43: fiscal year 1 April - 31 March. For the five months 1 November 1934 - 31 March 1935, the data source records 11,857 acres sold and 690 acres leased.

CONTRACT DRILLING OPERATIONS, 1936-1977

Year	Feet Drilled			Income From Drilling (Dollars)	Number of Employees	Salaries and Wages Paid (Dollars)
	Surface	Underground	Total			
1936	a	a	830 350	2 203 023	470	715 039
1937	-	-	-	-	-	-
1938	a	a	1 315 621	2 146 904	910	1 026 178
1939	a	a	1 212 174	1 747 290	1 858[b]	929 886
1940	a	a	1 302 848	1 556 927	707	829 341
1941	a	a	1 653 075	1 736 464	866	913 873
1942	a	a	1 536 954	1 554 116	553	815 821
1943	a	a	1 417 935	1 763 124	508	820 591
1944	a	a	1 348 812	2 031 096	680	1 042 491
1945	a	a	1 676 076	2 817 502	788	1 331 532
1946	a	a	2 541 084	4 809 742	1 162	2 058 747
1947	a	a	1 493 597	2 605 154	836	1 359 526
1948	a	a	1 314 308	2 289 161	569	1 169 356
1949	a	a	1 650 338	2 734 168	553	1 262 688
1950	a	a	1 975 301	3 909 931	872	2 029 791
1951	a	a	1 946 883	4 862 666	1 131	2 545 608
1952	a	a	2 237 431	5 914 306	1 035	2 959 444
1953	a	a	1 565 751	4 760 670	854	2 326 869
1954	a	a	2 454 373	7 309 992	1 118	3 558 279
1955	a	a	3 424 492	12 042 444	1 543	5 407 353
1956	a	a	2 465 846	9 402 606	1 265	4 125 180
1957	a	a	2 145 334	7 182 542	1 066	3 407 981
1958	a	a	1 513 190	3 894 204	523	2 284 065
1959	a	a	1 938 118	5 052 204	579	2 335 440
1960	a	a	2 271 650	6 231 578	668	2 755 402
1961	775 547	1 113 647	1 889 194[c]	5 331 059	609	2 329 342
1962	865 724	1 142 094	2 007 818	5 774 148	621	2 518 933
1963	797 988	1 211 733	2 009 721	5 714 857	642	2 700 423
1964	1 247 917	1 236 486	2 484 403	8 366 659	867	4 099 039
1965	1 421 296	1 045 879	2 467 175	9 347 469	821	4 308 109
1966	989 235	961 807	1 951 042	8 164 763	660	3 674 925
1967	823 295	956 871	1 780 166	7 605 561	626	3 704 247
1968	976 311	927 045	1 903 356	9 826 311	843	5 355 400
1969	1 271 623	976 213	2 247 836	12 430 222	1 028	6 866 332
1970	1 084 340	1 032 450	2 116 790	12 893 312	958	7 013 241
1971	752 487	793 388	1 545 875	9 641 769	672	5 178 330
1972	620 567	598 694	1 219 261	7 587 198	512	4 375 230
1973	589 121	570 591	1 159 712	6 261 925	449	4 306 796
1974	655 390	461 924	1 117 314	9 827 464	445	4 575 105
1975	879 044	415 579	1 294 623	16 716 571	451	5 644 619
1976	707 906	364 868	1 072 774	14 911 766	419	6 759 503
1977	721 612	370 328	1 091 940	16 662 408	364	6 711 821

[a]Separate data for surface and underground footage drilled not available for 1936-60.
[b]Includes part-time employees.
[c]Total not given in data sources for 1961-75.

GENERAL NOTES ON MINING REVENUE STATISTICS

SOURCES

There appear to be few raw data in Ministry files on provincial government revenue collected from the mining industry. The researchers were advised by the Mining Tax Assessment Section of the Mineral Resources Branch that files containing raw data are deposited, to the extent they exist, at the Records Centre in Mississauga. The researchers did not visit the Records Centre, however. Instead, the time series data on provincial mining revenue are constructed from the Annual Reports of the Division (Department) of Mines and the Public Accounts of the Province of Ontario. After 1957, the Annual Reports do not contain provincial mining revenue data.

THE FISCAL YEAR

The data series all apply to the fiscal year. Since 1891, however, the fiscal year of the Province of Ontario has been changed as follows:

1891-1908:	the calendar year;
1909/10 to 1935/36:	1 November - 31 October;
1935/36 to the present (1979):	1 April - 31 March.

As a result of the changes in the fiscal year, there are variations in the meaning of the time-period coverage by year in the data tables between the two sub-periods beginning with 1909. These are identified in footnotes to the tables.

THE DATA SERIES

Wherever possible, the data series are carried back to 1891. It appears, however, that for certain series (royalties and prospecting activity) there are discontinuities at 1906-07 which appear to be due to factors other than policy-induced effects.

All revenue series are receipts, as opposed to assessments, for the fiscal year.

Two principles have been adopted in presenting the various data series on provincial mining revenue. First, the series here are organized, to the extent possible, by function. (In the data sources, the series are organized in a variety of ways over time.) Every attempt has been made to assign reported data to one of the functional categories that have been established for this part of the statistical compendium.

The second principle requires the presentation of data in highly disaggregated form. For three of the groups, however, the smallness of the numbers and the tattered time-series appear to warrant a preparation of totals only. The groups with aggregates only are: sales of goods and services; miscellaneous licences and permits; and miscellaneous revenue. The contents of these groups, as in the case of the other revenue series groups, are detailed below.

For the totals of each revenue group, the procedure has been to rely on published totals. Where independent summations have been carried out, this will be indicated. Finally, all data are rounded to the nearest dollar. For this reason totals may not be identical to sums of the constituent series.

CONCEPTS AND DEFINITIONS

Mining Land Sales and Leases

Revenue from the sale of lands in fee simple requires comment on only one point. The disproportionately large figure for 1907 is due to the sale of the beds of Cobalt and Kerr Lakes at public tender in December 1906 and January 1907. Sales were made on the condition that the buyer paid 10 percent of the price at the time of purchase. ('Annual Report of the Minister of Lands, Forests and Mines, 1907,' Sessional Papers Ontario 40 (1908), no. 3, p. vii.)

Land leases comprise mining land leases, licences of occupation, and gas leases.

Prospecting Activity

Grouped under prospecting activity are miners' licences, Temagami Forest Reserve permits (designated in this series as permits), and fees charged for recording mining claims.

Up to and including 1920, totals only are provided in the published sources, although the accounts are itemized for 1907, and 1911 through to 1913. The total for 1898 has been derived residually, and the totals for the years 1926 to 1944 have been aggregated from the source documents.

For 1969 and 1970 only, the revenue from miners' licences is assigned, in an unspecified amount, to the total for miscellaneous licences and permits.

Royalties

The first record of mining royalty payment is for 1906.

Royalties on sand and gravel include an unspecified sum received for sand and gravel licences for the years 1916 and 1917. The entries under sand and gravel royalties for 1972 to 1976 are designated as metallic and nonmetallic mining royalties in the Public Accounts. This aggregate includes salt mining royalties.

The total of royalty revenues are calculated from the source documents for 1916, 1923, and 1972 to 1976.

Taxes

Taxes on mining operations include the mining profits tax, gas tax, and acreage tax. These taxes were implemented in 1907 under the Supplementary Revenue Act (S.O., 1907, c. 9). Although the levy on natural gas production is termed a tax, it is, in effect, a royalty. For the years 1907 to 1912, the Annual Reports of the Bureau of Mines provide two revenue schedules which distinguish actual receipts for the year and the amounts collected and belonging to the particular fiscal year. The data presented here are the actual receipts.

Sales of Goods and Services

The major share of revenues from the sales of goods and services is from laboratory fees, including chemical and assay fees, sampling and assay fees, and cable-testing fees. The second important sub-group is sales of record books, blueprints and maps.

In addition, there is an assortment of other items, one of which merits special attention. The relatively large totals for 1907 and 1908 are mainly associated with the Provincial Mine (on the Gillies Limit) and include: sales of ore from the mine in 1907 ($12,593) and proceeds from the sale of the mine in 1908 ($113,111).

The totals are derived by summing the various accounts from the sources for all years. The total for 1970 and 1971 includes only laboratory fees and sales of record books, blueprints and maps. Since 1972, revenue from the sales of goods and services to the mining industry is not available as a separate account.

Miscellaneous Licences and Permits

This primarily includes licences and permits for: sand and gravel; quarrying; natural gas; refining; and boring. A variety of other kinds of permits are included from time to time. The major component, however, is sand and gravel and quarrying licences.

Revenue from sand and gravel licences for 1916 and 1917 is included in sand and gravel royalties. The grand totals for 1969 and 1970 include revenue from miners' licences. This inclusion accounts for the large increase in the numbers recorded for these two years. In 1969 and 1970 only a total for this group is recorded. Beginning in 1971 the various items are listed separately. For 1971 the total for this item is listed as 'other' under Fees, Licences and Permits and may include other items than licences and permits. From 1972 on the total includes only licence fees for pits and quarries. The revenue totals for 1919 to 1968 have been calculated from the sources.

Miscellaneous Revenue

The totals have been computed from a variety of leftovers that have been arbitrarily assigned to a miscellaneous revenue account, including casual fees, Natural Gas Commission office fees, sulphur fumes arbitrator damages collection, refunds, and assorted other items. None of the individual accounts encompass the entire 1916-69 period, and all were apparently allocated to other accounts after 1969.

PROVINCIAL MINING REVENUE:
MINING LAND SALES, 1891-1977
(Dollars)

Year	Land Sales
1891	117 514
1892	15 273
1893	11 498
1894	7 646
1895	15 868
1896	22 084
1897	59 478
1898	40 469
1899	75 367
1900	69 196
1901	24 865
1902	8 203
1903	22 242
1904	18 242
1905	7 390
1906	118 244
1907	1 184 719
1908	23 445
1909[a]	235 098
1910[b]	327 160
1911	64 268
1912	51 634
1913	95 069
1914	41 028
1915	46 585
1916	36 579
1917	57 054
1918	33 536
1919	28 511
1920	39 095
1921	25 834
1922	28 496
1923	30 043
1924	83 823
1925	40 694
1926	38 578
1927	43 709
1928	73 937
1929	76 512
1930	28 243
1931	33 013
1932	17 918
1933	37 637
1934	54 592
1935[c]	49 103
1936	77 039
1937	71 449
1938	61 323
1939	74 378
1940	65 199
1941	70 960
1942	40 100
1943	39 413
1944	45 898
1945	100 811
1946	134 536
1947	79 147
1948	36 314
1949	39 879
1950	81 842
1951	92 778
1952	91 375
1953	64 271
1954	112 186
1955	183 398
1956	228 426
1957	166 088
1958	77 938
1959	40 702
1960	62 451
1961	40 682
1962	66 302
1963	102 347
1964	2 209
1965	3 129
1966	2 781
1967	11 930
1968	1 742
1969	0
1970	0
1971	908
1972	2 635
1973	1 938
1974	1 691
1975	1 518
1976	32 015
1977	17 870

[a]Ten months, 1 January to 31 October.
[b]1910-34: fiscal year 1 November - 31 October.
[c]1935-76: fiscal year 1 April - 31 March. Revenue for the five months 1 November 1934 - 31 March 1935 is $32,403.

PROVINCIAL MINING REVENUE: LEASES, 1891-1977
(Dollars)

Year	Mining Land Leases	Licences of Occupation	Gas Leases	Total Leases
1891	4 886	0	0	4 886
1892	12 917	0	0	12 917
1893	14 670	0	0	14 670
1894	10 297	0	0	10 297
1895	18 211	0	0	18 211
1896	18 504	0	0	18 504
1897	91 062	0	0	91 062
1898	57 493	0	0	57 493
1899	75 608	0	0	75 608
1900	36 297	0	0	36 297
1901	41 635	0	0	41 635
1902	39 459	0	0	39 459
1903	46 296	0	0	46 296
1904	25 321	0	0	25 321
1905	39 547		0	39 547
1906	46 621	0	0	46 621
1907	21 563	0	0	21 563
1908	20 612	0	0	20 612
1909[a]	19 017	0	0	19 017
1910[b]	29 009	0	0	29 009
1911	25 797	0	0	25 797
1912	33 098	0	0	33 098
1913	20 878	0	0	20 878
1914	16 470	0	0	16 470
1915	13 842	0	0	13 842
1916	16 218	0	0	16 218
1917	16 845	0	0	16 845
1918	14 009	0	0	14 009
1919	14 271	0	0	14 271
1920	22 412	0	0	22 412
1921	13 655	5 208	0	18 863
1922	13 483	6 785	0	20 267
1923	9 563	6 010	0	15 573
1924	12 019	5 342	0	17 361
1925	11 390	6 164	25	17 579
1926	11 288	4 784	50	16 122
1927	8 655	1 846	3 700	14 201
1928	7 450	2 692	3 750	13 892
1929	7 151	1 948	3 750	12 849
1930	4 708	2 856	7 400	14 964
1931	4 761	2 266	5 000	12 026
1932	3 494	1 858	4 100	9 452
1933	5 920	3 424	4 100	13 445
1934	7 600	5 908	4 100	17 608
1935[c]	8 986	5 262	5 770	20 018

PROVINCIAL MINING REVENUE: LEASES, 1891-1977 (Cont'd)
(Dollars)

Year	Mining Land Leases	Licences of Occupation	Gas Leases	Total Leases
1936	11 626	11 567	5 382	33 576
1937	12 486	8 259	6 370	27 115
1938	11 123	6 935	5 870	23 929
1939	13 084	8 615	8 146	29 844
1940	14 404	9 858	18 967	43 229
1941	11 940	10 894	20 145	42 979
1942	10 854	6 861	14 595	32 311
1943	10 219	9 613	13 715	33 547
1944	15 165	15 716	14 395	45 276
1945	13 961	16 913	14 395	45 269
1946	16 256	17 443	14 095	47 794
1947	15 549	16 711	14 095	46 355
1948	14 852	12 148	14 860	41 860
1949	15 938	13 178	15 421	44 536
1950	15 673	16 784	14 652	47 109
1951	17 589	14 042	16 627	48 259
1952	18 022	18 667	19 549	56 238
1953	31 187	18 205	40 737	90 129
1954	28 132	25 698	58 592	112 422
1955	31 336	26 382	75 679	133 397
1956	34 387	26 523	73 102	134 012
1957	35 192	23 906	263 633	322 732
1958	38 149	24 488	427 840	490 497
1959	39 536	30 171	216 612	286 318
1960	47 642	19 871	180 759	248 273
1961	60 505	33 278	241 960	335 743
1962	51 498	33 658	239 339	324 495
1963	58 032	31 180	229 727	318 940
1964	66 353	40 652	184 388	291 393
1965	48 879	27 662	176 789	253 330
1966	81 054	33 480	161 346	275 881
1967	67 362	40 986	535 385	643 733
1968	73 413	60 443	523 657	657 513
1969	119 968	122 889	464 213	707 070
1970	107 477	117 839	421 642	646 958
1971	130 242	121 905	321 804	573 951
1972	116 374	97 026	529 846	743 246
1973	109 647	128 854	620 066	858 567
1974	120 367	104 797	765 232	990 396
1975	155 758	115 252	479 281	750 291
1976	145 197	69 970	440 842	656 009
1977	199 542	113 019	489 919	802 480

[a]Ten months, 1 January to 31 October.
[b]1910-34: fiscal year 1 November - 31 October.
[c]1935-76: fiscal year 1 April - 31 March. Revenue for the five months 1 November 1934 - 31 March 1935 is: mining land leases, $3,003; licences of occupation, $4,534; gas leases, $400; total leases, $7,937.

PROVINCIAL MINING REVENUE:
PROSPECTING ACTIVITY, 1897-1977
(Dollars)

Year	Revenue
1897	3 021
1898	3 223
1899	4 979
1900	6 801
1901	4 405
1902	2 742
1903	2 241
1904	1 597
1905	14 623
1906	70 256
1907	272 397
1908	137 730
1909[a]	219 474
1910[b]	193 682
1911	211 769
1912	107 163
1913	93 256
1914	64 195
1915	52 309
1916	66 907
1917	62 256
1918	52 272
1919	63 963
1920	59 098
1921	51 472
1922	87 295
1923	93 079
1924	95 272
1925	86 483
1926	172 463
1927	222 935
1928	256 943
1929	169 756
1930	96 599
1931	103 327
1932	82 732
1933	116 197
1934	220 020
1935[c]	176 454
1936	304 155
1937	189 133
1938	159 142
1939	108 971
1940	85 960
1941	72 333
1942	56 237
1943	90 049
1944	147 323
1945	222 295
1946	229 238
1947	212 353
1948	171 656
1949	197 469
1950	200 583
1951	205 924
1952	228 639
1953	419 004
1954	501 130
1955	761 378
1956	663 985
1957	421 544
1958	399 492
1959	362 293
1960	291 555
1961	261 352
1962	253 692
1963	292 125
1964	711 053
1965	561 546
1966	573 603
1967	634 115
1968	696 116
1969	700 055
1970	604 624
1971	462 368
1972	524 540
1973	526 482
1974	545 670
1975	559 909
1976	511 307
1977	436 619

[a]Ten months: 1 January to 31 October.
[b]1910-34: fiscal year 1 November - 31 October.
[c]1935-76: fiscal year 1 April - 31 March. Revenue for the five months November 1934 - 31 March 1935 is $51,392.

PROVINCIAL MINING REVENUE: ROYALTIES, 1906-1977
(Dollars)

Year	Mining Royalties	Sand and Gravel Royalties	Gas and Oil Royalties	Salt Royalties	Total Royalties
1906	15 000[a]	-	-	-	15,000
1907	207 945	-	-	-	207 945
1908	218 072	-	-	-	218 072
1909[c]	338 427	-	-	-	338 427
1910[d]	246 529	-	-	-	246 529
1911	285 913	-	-	-	285 913
1912	250 146	-	-	-	250 146
1913	200 333	-	-	-	200 333
1914	74 685	-	-	-	74 685
1915	52 861	-	-	-	52 861
1916	15 084	14 680[e]	-	-	29 764
1917	0	28 373[e]	-	-	28 372
1918	0	29 464	-	-	29 464
1919	0	25 218	-	-	25 218
1920	0	99 325	-	-	99 325
1921	0	131 001	-	-	131 001
1922	81 014	100 955	-	-	181 968
1923	1 746	80 742	-	-	82 489
1924	b	107 185	-	-	107 185
1925	b	98 118	-	-	98 118
1926	b	106 197	-	-	106 197
1927	b	124 854	-	-	124 854
1928	b	127 417	-	-	127 417
1929	b	134 885	-	-	134 885
1930	b	278 157	-	-	278 157
1931	b	81 345	-	-	81 345
1932	b	51 060	-	-	51 060
1933	b	16 022	-	-	16 023
1934	b	21 690	-	-	21 690
1935[f]	b	24 334	-	-	24 334
1936	b	43 979	-	-	43 979
1937	b	55 008	-	-	55 008
1938	b	48 739	-	-	48 739
1939	b	29 530	-	-	29 530
1940	b	45 433	-	-	45 433
1941	b	57 761	-	-	57 761
1942	b	59 802	-	-	59 802
1943	b	50 044	-	-	50 044
1944	b	42 869	-	-	42 869
1945	b	38 601	-	-	38 601
1946	b	56 977	200	-	57 177
1947	b	78 451	200	-	78 651
1948	b	81 522	200	-	81 722
1949	b	89 188	250	-	89 438
1950	b	88 634	350	-	88 984

PROVINCIAL MINING REVENUE: ROYALTIES, 1906-1977 (Cont'd)
(Dollars)

Year	Mining Royalties	Sand and Gravel Royalties	Gas and Oil Royalties	Salt Royalties	Total Royalties
1951	b	91 144	450	-	91 594
1952	b	90 507	450	-	90 957
1953	b	112 411	150	-	112 561
1954	b	110 106	2 287	-	112 394
1955	b	176 173	3 713	-	179 885
1956	b	198 427	5 897	-	204 324
1957	b	322 462	11 217	-	333 679
1958	b	245 078	22 952	-	268 030
1959	b	222 910	34 937	-	257 847
1960	b	215 474	77 190	-	292 663
1961	b	190 856	87 457	-	278 313
1962	b	209 180	114 007	-	323 186
1963	b	145 968	117 305	-	263 273
1964	b	184 632	164 041	-	348 673
1965	b	208 141	159 044	-	367 184
1966	b	270 404	157 925	-	428 329
1967	b	261 583	150 745	-	412 329
1968	b	240 153	109 676	60 679	410 508
1969	b	256 097	94 998	82 546	433 642
1970	b	251 176	63 752	223 480	538 408
1971	b	447 749	202 788	141 686	792 223
1972	b	634 595g	86 050	h	720 645
1973	b	561 530	182 932	h	744 462
1974	b	647 809	116 130	h	763 939
1975	b	631 692	204 613	h	836 305
1976	b	646,255	173,712	h	819 967
1977	b	623 652	442 169	h	1 065 821

[e]The first year of recorded revenues from mining royalties.
[b]There are no revenues from mining royalties after 1923.
[c]Ten months: 1 January - 31 October.
[d]1910-34: fiscal year 1 November - 31 October.
[e]Includes an unspecified amount of revenue from sand and gravel rentals.
[f]1935-76: fiscal year 1 April - 31 March. Revenue from sand and gravel royalties and from total royalties, for the five months 1 November 1934 - 31 March 1935 is $12,225.
[g]Described in data sources as royalties from metallic and nonmetallic mining for 1972-76.
[h]Included under sand and gravel royalties, 1972-76.

PROVINCIAL MINING REVENUE: TAXES, 1907-1977
(Dollars)

Year	Mining Profits Tax	Gas Tax	Acreage Tax	Total Taxes
1907	26 922	11 527	5 004	43 453
1908	100 539	15 037	9 502	125 078
1909[a]	28 813	10 720	10 198	49 730
1910[b]	120 688	7 128	15 394	143 210
1911	176 314	18 576	14 571	209 462
1912	155 507	19 598	15 771	190 876
1913	173 533	23 615	13 916	211 064
1914	272 611	24 204	10 046	306 861
1915	139 979	26 407	10 716	177 102
1916	140 560	33 630	12 637	186 827
1917	1 503 968	39 228	14 348	1 557 543
1918	863 548	26 359	29 302	919 209
1919	553 027	38 798	33 126	624 951
1920	713 291	22 526	71 223	807 041
1921	183 822	21 450	37 581	242 853
1922	160 994	16 742	34 760	212 496
1923	253 126	15 768	31 318	300 213
1924	191 982	15 378	37 208	244 568
1925	287 187	14 272	32 165	333 624
1926	410 974	12 584	33 431	456 989
1927	340 890	13 390	36 755	391 035
1928	356 034	12 704	81 452	450 190
1929	397 004	13 603	33 541	444 148
1930	502 525	15 311	30 741	548 577
1931	480 301	14 903	30 602	525 805
1932	515 154	67 832	20 618	603 603
1933	679 731	33 578	30 692	744 000
1934	1 073 824	32 002	35 447	1 141 273
1935[c]	1 400 656	33 626	42 554	1 476 836
1936	1 563 681	34 906	78 231	1 676 818
1937	1 801 500	44 170	49 386	1 895 056
1938	2 128 007	48 079	46 934	2 223 020
1939	1 906 739	50 237	44 769	2 001 745
1940	2 002 908	56 632	52 952	2 112 493
1941	2 390 934	62 055	40 083	2 493 072
1942	2 262 770	54 236	43 727	2 360 733
1943	1 850 513	50 182	37 355	1 938 050
1944	1 420 411	37 766	44 653	1 502 830
1945	1 820 834	32 820	71 137	1 924 792
1946	900 125	35 564	99 548	1 035 237
1947	2 266 659	32 220	104 594	2 403 472
1948	2 681 344	30 102	122 379	2 833 825
1949	2 720 680	33 764	114 096	2 868 540
1950	3 824 796	31 144	117 647	3 973 587

PROVINCIAL MINING REVENUE: TAXES, 1907-1977 (Cont'd)
(Dollars)

Year	Mining Profits Tax	Gas Tax	Acreage Tax	Total Taxes
1951	5 222 698	29 878	128 726	5 381 302
1952	4 377 163	32 230	123 766	4 533 158
1953	3 924 521	31 797	147 370	4 103 687
1954	4 509 128	39 856	156 281	4 705 264
1955	6 611 509	42 167	148 215	6 801 890
1956	8 016 487	45 646	146 186	8 208 320
1957	9 611 946	54 234	141 264	9 807 444
1958	7 223 960	61 055	154 847	7 439 862
1959	12 908 669	72 490	157 867	13 139 026
1960	17 096 831	74 669	130 651	17 302 150
1961	15 444 439	82 541	163 198	15 690 178
1962	15 222 195	61 118	146 456	15 429 768
1963	10 362 297	100 319	152 878	10 615 495
1964	14 386 839	41 24½	151 780	14 579 868
1965	14 889 068	64 809	140 119	15 093 996
1966	10 640 398	50 542	160 572	10 851 512
1967	16 105 638	75 337	153 368	16 334 342
1968	19 615 792	57 310	146 707	19 819 810
1969	23 890 238	52 462	598 763	24 541 464
1970	24 731 492	47 658	662 492	25 441 642
1971	13 322 701	0	643 044	13 965 745
1972	16 344 101	0	673 804	17 017 905
1973	46 309 367	0	653 238	46 962 605
1974	152 105 039	0	697 562	152 802 601
1975	62 438 191	0	643 262	63 081 453
1976	41 041 961	0	610 859	41 652 820
1977	22 308 495	0	610 881	22 919 376

[a]Ten months: 1 January to 31 October.
[b]1910-34: fiscal year 1 November - 31 October.
[c]1935-36: fiscal year 1 April - 31 March. Revenues for the five months 1 November 1934 - 31 March 1935 are: gas tax, $820; acreage tax, $10,726; total tax, $11,545.

PROVINCIAL MINING REVENUE: OTHER, 1907-1977
(Dollars)

Year	Sales of Goods and Services	Miscellaneous Licences and Permits	Miscellaneous
1907	1 643	-	-
1908	24 242	-	-
1909[a]	117 719	-	-
1910[b]	1 440	-	-
1911	1 711	-	-
1912	862	-	-
1913	793	-	-
1914	430	-	-
1915	289	-	-
1916	745	-	-
1917	727	-	32
1918	2 107	3 470	0
1919	730	4 849	0
1920	634	5 237	84 659
1921	4 776	13 934	13 233
1922	17 833	7 584	14 279
1923	21 952	4 018	15 505
1924	32 654	4 313	8 042
1925	22 903	3 913	10 097
1926	29 258	9 425	9 383
1927	25 313	7 321	10 456
1928	26 359	6 639	12 867
1929	24 877	8 433	10 565
1930	28 679	7 440	9 372
1931	29 226	7 320	7 178
1932	20 965	4 156	3 873
1933	7 363	3 420	4 637
1934	21 212	3 576	7 916
1935[c]	26 910	3 150	8 803
1936	34 840	5 491	11 724
1937	26 197	3 926	9 295
1938	28 603	3 681	7 865
1939	29 673	4 756	7 617
1940	32 968	3 386	4 296
1941	27 072	3 622	4 502
1942	42 647	2 217	2 603
1943	34 171	2 803	4 664
1944	24 281	7 549	5 369
1945	52 452	3 763	8 134
1946	76 623	3 847	13 211
1947	73 127	3 652	8 619
1948	93 924	3 316	8 084
1949	44 386	3 439	
1950	75 173	3 840	9 061
1951	115 673	3 965	9 941
1952	159 048	4 386	11 639
1953	188 697	4 739	241 451
1954	194 371	1 996	34 154
1955	194 076	3 159	44 992
1956	172 901	2 545	39 011
1957	156 721	72 430	62 483
1958	134 875	3 369	13 204
1959	151 983	2 511	13 371
1960	179 326	3 455	11 390
1961	136 623	3 576	9 106
1962	154 542	4 036	8 427
1963	152 338	4 474	10 658
1964	184 361	3 743	34 233
1965	170 944	5 352	21 089
1966	166 703	5 560	19 509
1967	186 123	5 543	18 942
1968	197 390	6 100	24 094
1969	182 296	76 884	13 888
1970	[d]	90 007	[e]
1971	[d]	35 479	[e]
1972	[d]	33 550	[e]
1973	[d]	58 850	[e]
1974	[d]	73 625	[e]
1975	[d]	94 900	[e]
1976	[d]	89 675	[e]
1977	[d]	89 300	[e]

[a] Ten months: 1 January to 31 October.
[b] 1910-34: fiscal year 1 November - 31 October.
[c] 1935-76: fiscal year 1 April - 31 March. Revenues for the five months 1 November 1934 - 31 March 1935 are: sales of goods and services, $17,661; miscellaneous licences and permits, $1,471; miscellaneous, $8,847.
[d] Revenue from sales of goods and services is not available as a separate account.
[e] Miscellaneous revenue is not available as a separate account.

TAXES PAID BY THE METAL MINING INDUSTRY

SOURCE

Minerals Unit, Primary and Manufacturing Industries Division, Statistics Canada.

INDUSTRY CLASSIFICATION

For standard Industrial Classifications, 1961 to 1977 see Input Statistics p. and for 1945 to 1961 see Input Statistics p.

METHODS

The data on taxes paid are collected in the annual Census of Mines, and pertain to actual tax payments in the calendar year. The series for which data are collected include: federal corporation income tax (including taxes on non-operating income); provincial taxes, an aggregate of mining taxes on net profits from mine production, corporation income tax, taxes on capital and places of business, acreage taxes, and royalties; municipal and school taxes based on property valuation and on non-operating revenue. The three series are presented in the tables below separately for total metals, gold, iron, and other metal mining industries for the period 1945-77.

The 'Reporting Guide' provided with the census forms has never carried explicit instructions on how taxes should be reported. The interpretation as to what should be reported has been left to the discretion of the individuals completing the census form. No attempt has ever been made to check the authenticity of the figures submitted by the respondents.

A number of biases exist in the federal income tax and provincial tax data when they are organized by province. The biases arise from problems in allocating corporate income taxes both federal and provincial to a particular province. On a provincial basis the data likely incorporate both understatement and overstatement of values. The direction of the biases cannot always be evaluated, but the nature of the biases can be identified.

The Census of Mines is a survey of mining establishments, and most census reports are completed by the accounting department at the mining operation. In some cases, however, the individuals responsible for completing and submitting the census forms have no responsibility for filing federal and provincial tax returns, which are handled at head office. Consequently, they do not have the information relating to federal and provincial taxes paid, and so would leave the question blank on the census. As a result the published number would be understated.

A second source of bias is the trans-provincial operations of some mining companies. In cases where mining companies operate both in Ontario and in one or more other provinces, there arises the question of appropriate allocation of the federal income tax among the respective provinces. Federal income taxes are filed on a company basis. Income taxes are calculated on the total Canadian operations and a company makes no effort to allocate federal taxes by province for its own purposes. Whether this will overstate or understate the federal income tax figures for Ontario in the census data depends upon the head-office location of the mining company and hence the specific provincial reporting form used by the company. Thus, for companies operating in two or more provinces but with head-office in Ontario, the federal taxes paid figure for Ontario will be biased upwards. Conversely, there is a downward bias where a mining company with trans-provincial operations has its head-office outside Ontario. On balance, the composition of the head-office location of mining firms with metal mining operations in Ontario would suggest that, on this account, the net bias is in the direction of an overstatement of the federal income tax allocable to Ontario.

A third bias results from the tax reporting of integrated nonferrous mining, smelting and refining companies. Some of the profits, and taxable income, should be treated as belonging to their smelting/refining operations. However, since profits are not allocated in such a manner in income tax returns, all federal taxes for them are treated as coming from mining operations.

The data shown in the tables are as reported in, and taken from the Census of Mines. As indicated above, however, the federal and provincial tax series have several limitations, and are not to be construed as applying exclusively to the respective metal mining industries in Ontario.

TOTAL METAL MINING: TAXES PAID, 1945-1977
(Dollars) (In Calendar Year Shown)

Year	Federal	Provincial	Municipal	Total
1945	16 053 911	1 070 014	489 162	17 613 087
1946	14 058 572	1 153 838	538 104	15 750 514
1947	11 100 518	2 872 069	634 614	14 607 201
1948	11 328 578	3 906 006	717 574	15 952 158
1949	13 849 259	5 461 952	790 067	20 101 278
1950	17 473 973	5 777 857	871 480	24 123 310
1951	28 120 745	8 827 949	1 053 024	38 001 718
1952	34 357 344	7 487 947	1 125 671	42 970 962
1953	30 501 026	4 215 203	1 225 701	35 941 930
1954	26 868 037	4 180 858	1 310 366	32 359 261
1955	23 666 554	4 801 162	1 323 015	29 790 731
1956	46 713 610	6 790 459	1 527 576	55 031 645
1957	35 498 302	15 682 473	1 721 451	52 902 226
1958	15 796 051	12 360 172	2 168 397	30 324 620
1959	10 265 780	9 105 163	2 347 449	21 718 392
1960	29 380 360	24 989 787	2 454 051	56 824 198
1961	26 037 387	19 919 462	2 635 042	48 591 891
1962	34 788 518	27 569 918	2 767 885	65 126 321
1963	26 140 583	18 236 815	2 755 126	47 132 524
1964	34 407 309	17 147 909	2 793 930	54 349 148
1965	51 980 611	25 339 548	2 940 187	80 260 346
1966	47 050 349	23 887 077	3 174 940	74 112 366
1967	28 228 159	18 035 454	3 386 570	49 650 183
1968	33 954 434	21 632 021	3 582 593	59 169 048
1969	20 792 721	24 237 096	3 921 311	48 951 128
1970	13 769 647	15 146 821	9 423 699	38 440 167
1971	27 920 049	67 624 012	8 821 285	104 365 346
1972	6 230 285	11 608 336	8 702 512	26 541 133
1973	29 412 040	27 593 536	10 825 401	67 830 977
1974	88 299 128	81 662 505	11 382 965	181 344 598
1975	109 368 530	191 389 316	15 663 759	316 421 605
1976	55 215 560	95 463 617	18 441 314	169 120 491
1977	21 557 866	72 608 514	21 138 141	115 304 521

GOLD MINES: TAXES PAID, 1945-1977
(Dollars) (In Calendar Year Shown)

Year	Federal	Provincial	Municipal	Total
1945	5 539 343	295 328	184 160	6 018 831
1946	5 110 219	369 862	212 366	5 692 447
1947	3 071 375	701 619	242 514	4 015 508
1948	2 089 406	936 064	275 688	3 301 158
1949	3 108 732	1 337 300	285 186	4 731 218
1950	4 299 176	1 634 649	293 109	6 226 934
1951	4 463 765	1 684 085	293 292	6 441 142
1952	4 336 122	1 280 042	294 490	6 910 654
1953	3 024 202	930 131	317 080	4 271 413
1954	3 209 541	847 398	313 365	4 370 304
1955	3 630 971	1 081 987	316 783	5 029 741
1956	3 552 983	1 175 317	312 064	5 040 364
1957	2 709 267	1 714 231	357 429	4 780 927
1958	2 558 724	1 920 862	343 728	4 823 314
1959	3 107 650	2 147 885	365 317	5 620 852
1960	2 963 737	2 044 876	382 960	5 391 573
1961	3 299 772	2 189 191	420 617	5 909 580
1962	2 505 247	1 888 091	408 675	4 802 013
1963	2 886 932	1 815 037	401 833	5 103 802
1964	2 026 982	1 584 433	419 931	4 031 346
1965	1 557 568	1 358 496	442 160	3 358 224
1966	1 573 690	1 142 519	449 000	3 165 209
1967	1 649 794	1 222 663	413 188	3 285 645
1968	1 545 254	920 052	435 540	2 900 845
1969	1 642 985	1 044 194	411 881	3 099 060
1970	838 142	941 015	623 124	2 402 281
1971	973 179	686 875	560 763	2 220 817
1972	1 827 561	1 039 126	415 316	3 282 003
1973	5 211 415	4 446 876	430 190	10 088 481
1974	8 357 345	6 477 499	442 188	15 777 032
1975	10 023 966	9 909 163	832 799	20 765 928
1976	4 141 841	7 522 603	953 646	12 618 090
1977	6 054 572	4 203 961	1 063 345	11 321 878

IRON MINES: TAXES PAID, 1945-1977
(Dollars) (In Calendar Year Shown)

Year	Federal	Provincial	Municipal	Total
1945	72 177	3 908	3 389	74 474
1946	116 437	9 918	3 789	130 144
1947	6 187	14 587	4 501	25 275
1948	-	37 596	6 210	43 806
1949	78 006	33 241	7 212	118 459
1950	297 283	99 994	10 118	407 395
1951	131 905	181 649	12 944	326 498
1952	1 115	86 850	18 583	106 548
1953	-	24 726	23 571	48 297
1954	-	72 047	29 276	101 323
1955	9 502	77 460	47 969	134 931
1956	435 000	555 058	51 314	1 041 372
1957	368 000	1 020 856	75 472	1 464 328
1958	596 650	337 995	67 093	1 001 738
1959	513 186	230 079	68 922	812 187
1960	-	592 303	71 444	663 747
1961	-	333 044	86 148	419 192
1962	-	1 543 849	85 826	1 629 675
1963	397 325	1 154 250	82 382	1 633 957
1964	191 983	1 263 852	80 969	1 536 804
1965	496 080	1 421 850	79 252	1 997 182
1966	993 173	1 122 748	91 500	2 207 421
1967	724 800	1 346 300	94 219	2 165 319
1968	658 750	1 620 237	95 368	2 374 355
1969	367 416	1 533 792	97 645	1 998 853
1970	2 816 899	3 366 037	883 666	7 066 602
1971	1 402 018	2 559 987	975 540	4 937 545
1972	81 378	239 894	950 464	1 271 736
1973	74 525	1 741 251	1 065 150	2 880 926
1974	1 888 552	2 275 199	1 121 451	5 285 202
1975	3 915 857	3 695 005	1 775 427	9 386 289
1976	2 432 642	3 150 880	2 047 368	7 630 890
1977	2 419 589	2 861 426	2 374 177	7 655 192

OTHER METAL MINES: TAXES PAID, 1945-1977
(Dollars) (In Calendar Year Shown)

Year	Federal	Provincial	Municipal	Total
1945	10 442 391	770 778	301 613	11 514 782
1946	8 831 916	774 058	321 949	9 927 923
1947	8 022 956	2 155 863	387 599	10 566 418
1948	9 239 172	2 932 346	435 676	12 607 194
1949	10 662 521	4 091 411	497 669	15 251 601
1950	12 877 514	4 043 214	568 253	17 488 981
1951	23 525 075	6 962 215	746 788	31 234 078
1952	30 020 107	6 121 055	812 598	36 953 760
1953	26 351 153	3 260 346	885 050	30 496 549
1954	23 658 496	3 261 413	967 725	27 887 634
1955	20 026 081	3 641 715	958 263	24 626 059
1956	42 725 627	5 060 084	1 164 198	48 949 909
1957	32 421 035	12 947 386	1 288 550	46 656 971
1958	12 640 677	10 101 315	1 757 576	24 499 568
1959	6 644 944	6 727 199	1 913 210	15 285 353
1960	26 416 623	22 352 608	1 999 647	50 768 878
1961	22 737 615	17 397 227	2 128 277	42 263 119
1962	32 283 271	24 137 978	2 273 384	58 694 633
1963	22 856 326	15 267 528	2 270 911	40 394 765
1964	32 188 344	14 299 624	2 293 030	48 780 998
1965	49 926 963	22 559 202	2 418 775	74 904 940
1966	44 483 486	21 621 810	2 634 440	68 739 736
1967	25 853 565	15 466 491	2 879 163	44 199 219
1968	31 750 430	19 091 732	3 051 685	53 893 847
1969	18 782 320	21 659 110	3 411 785	43 853 215
1970	10 114 606	10 939 769	7 916 909	28 971 284
1971	25 544 852	64 377 150	7 284 982	97 206 984
1972	4 321 346	10 329 316	7 336 732	21 987 394
1973	24 126 100	21 405 409	9 330 061	54 861 570
1974	78 053 231	72 909 807	9 819 326	160 782 364
1975	95 428 707	177 785 148	13 055 533	286 269 388
1976	48 641 077	84 790 134	15 440 300	148 871 511
1977	13 083 705	65 543 127	17 700 619	96 327 451

GENERAL NOTES ON INDUSTRIAL RELATIONS STATISTICS

This section draws together a selection of data dealing with various aspects of industrial relations as they have affected the Ontario metal mining industry in the post war period. Three series have been developed. The first covers the incidence and duration of strikes and lockouts while the second provides estimates of employer fringe benefits costs. The third series presents the results of a sample survey of direct and indirect labour costs incurred by Ontario metal mines. Notes are included with each set of data.

STRIKES AND LOCKOUTS IN METAL MINING

SOURCE

Canada, Department of Labour, Strikes and Lockouts in Canada (Annual).

METHODS

Strikes and Lockouts

No distinction is made between strikes and lockouts in the data source. Lockouts are not encountered very often, however. The data series consequently deal primarily with strikes.

Coverage

The strikes and lockouts covered in the Department of Labour's survey for the years 1945-73 include work stoppages involving six (6) or more workers and lasting one working day or more, and strikes lasting less than one day or involving less than six (6) workers but exceeding a total of nine (9) man-days. The coverage definition was changed in 1974 to record strikes and lockouts which amounted to ten (10) or more man-days. In 1977, the definition was further modified to record strikes and lockouts amounting to ten (10) or more man-days and one-half or more working days. The effect of these changes in definition on the coverage of work stoppages was negligible.

Workers Involved

The estimated total number of workers involved in the strike or lockout includes all workers directly affected, whether or not they all belong to the union involved in the dispute that led to the work stoppage. However, workers indirectly affected, such as those laid off as a result of the work stoppage, are not included in the data on the number of workers involved, unless otherwise specified.

Where the number of workers involved varied over the duration of the work stoppage, the maximum number is used in the data recorded. The methods for 1967-78 also note that the maximum number of workers involved during an entire stoppage is used even where that maximum applies to a previous year when the stoppage may have commenced.

Beginning in 1972, the methods make the additional observation that the total number of workers may include the same workers more than once if they were involved in more than one work stoppage during the year. Internal evidence contained in the detail list of strikes in the data source indicates that this also applies to the data for the years prior to 1972.

Duration in Working Days

The duration of each work stoppage is calculated in terms of normal working days, from the starting date to the termination date. The days counted as working days are those on which the establishment affected by the stoppage would normally be in operation.

Starting in 1977, the minimum duration designated for recording a stoppage in the data source is one-half working day. This adjustment conforms to the change in the criteria for coverage of strikes and lockouts.

Duration in Man-Days

Duration in man-days for a work stoppage is estimated by multiplying the duration in working days by the number of workers involved. Certain adjustments may be made, however, in deriving the estimates of duration in man-days for individual work stoppages. First, where a work stoppage involves establishments in which the number of working days per worker exceeds the work week of individual employees, duration in man-days is adjusted by applying the appropriate ratio. Second, to the extent practicable, variations in the number of workers involved in the course of the stoppage are taken into account in the calculations.

Beginning in 1967 the methods note that where the duration of the strike straddles two (or more) years, the total man-days reported for the given year also includes man-days lost in the previous year(s) in the list of individual strikes recorded in the data source. In 1977, however, this method was amended to exclude man-days lost in the previous year(s) in calculating duration in man-days for the year being reported. This modification permits the derivation of an accurate data series on a calendar-year basis.

These changes have little effect on the continuity of the data for the Ontario metal mining industry. Before 1976-77, there are only three instances where strikes straddle contiguous years: 1953-54; 1963-64; and 1969-70. In the data source, however, the figures for duration in working man-days for 1953-54 and for 1963-64 are allocated to their respective years in the cases

where strikes carry over into the following calendar year. But for the 1969-70 situation the figure for 1970 includes that portion of the man-days pertaining to 1969. Since the figure for 1969 is contained in the source, the number of man-days allocable to 1970 can be derived as a residual. This residual is the figure shown in the table for strikes and lockouts.

Compilation from Data Source

The Department of Labour publishes annually a list of individual strikes, organized by industry. The information on each strike includes: company; location; union local and affiliation; starting and termining dates of the work stoppage; number of workers involved; duration in man-days; and the major issues relating to the stoppage.

The coverage of individual work stoppages for which details are published varies over the period 1945-78 as follows:

i 1945-56: all work stoppages;
ii 1957-68: work stoppages involving 50 or more workers, or amounting to the number 250 or more man-days of working time lost;
iii 1969-78: work stoppages involving 100 or more workers.

This change in criterion for the inclusion of individual strikes in the published list of detailed data poses problems for data continuity for some industries. However, since most metal mining operations in Ontario employed more than 100 workers since 1968, the industry coverage is quantitatively comparable for all the years in the post-1945 period.

The data on strikes and lockouts in the Ontario metal mining industry are compiled from the list of individual strikes recorded in the data source. The table shows the number of workers involved and the duration in man-days.

METAL MINING: STRIKES AND LOCKOUTS, 1945-1978

Year	Number of Workers Involved	Duration (Man-Days)
1945	0	0
1946	0	0
1947	0	0
1948	0	0
1949	0	0
1950	404	2 100
1951	1 923[a]	82 940
1952	3 992	5 950
1953[b]	4 111	373 890
1954[b]	3 120	58 540
1955	80	440
1956[c]	7 757	23 670
1957	710	890
1958[d]	14 917	698 100
1959	533	14 700
1960	2 380	10 380
1961	1 060	1 200
1962	0	0
1963	329	6 800
1964	248	3 920
1965	625	4 560
1966	36 280[e]	364 660[f]
1967	731	1 990
1968	1 290	14 340
1969[g]	22 760	1 837 990
1970	355	7 460[h]
1971	0	0
1972	0	0
1973	412	16 470
1974	630	5 670
1975	18 400	323 620
1976	1 508	9 440
1977	1 538	1 990
1978[i]	14 050	894 480

[a]Total includes 391 workers indirectly affected (Canada, Dept. of Labour, Strikes and Lockouts in Canada, 1951, footnotes to table).

[b]Gold miners' strikes account for the totals shown.

[c]Total includes strike at Inco Ltd.'s, Port Colborne plant involving 2,100 workers and 2,100 man-days (Strikes and Lockouts in Canada, 1956, p. 32, included under 'Manufacturing').

[d]The nickel-copper workers strike at Inco Ltd., which included its Port Colborne plant, accounted for all but 417 workers and 600 man-days.

[e]Total includes two strikes at Inco Ltd., involving 15,770 workers in each strike in the Sudbury district plus 1,800 workers in the first strike and 1,730 in the second strike at the Port Colborne plant (Strikes and Lockouts, 1966, p. 38 - included under 'Manufacturing').

[f]Total includes 50,370 man-days at Inco's Port Colborne plant (Strikes and Lockouts, 1966, p. 38).

[g]Total includes Inco's Port Colborne plant involving 1,650 workers and 146,500 man-days (Strikes and Lockouts, 1969 - included under 'Manufacturing').

[h]Figure is computed as a residual from data source (see preceding notes).

[i]Nickel-copper workers strike at Inco Ltd., Sudbury district accounted for 11,750 workers and 889,650 man-days.

EMPLOYER FRINGE BENEFITS COSTS IN THE METAL MINING INDUSTRY

SOURCE

Minerals Unit, Manufacturing and Primary Industries Division, Statistics Canada.

METHODS

Data on employer fringe benefits costs are obtained by the annual Census of Mines. The mining census questionnaires are the only ones issued by Statistics Canada which have requested cost data on fringe benefits. Although data had been collected for several years ante-dating 1945, the tables in this section produce data beginning in 1945 and covering the period to 1977.

The data on fringe benefits fall into two general categories: employer fringe benefits contributions required by law, and employer contributions to voluntary benefits plans. Employer contributions required by law include: Workmen's Compensation; contributions to Unemployment Insurance; silicosis assessment; and contributions to the Canada Pension Plan (CPP). Although collection of contributions to CPP began, under statute, in 1966, Statistics Canada did not initiate the collection of data on employer contributions to the CPP in the annual census until 1972. In the same year data were first collected by Statistics Canada for employer contributions to voluntary insurance plans of all kinds, broken down by government-operated and privately-operated plans. No data appear to have been collected in the census for employer contributions to company pension plans.

Although several categories of employer fringe benefits costs are provided for in the annual census, the data have to be treated with caution. No specific reporting instructions have ever been issued in either the census report form or the 'Reporting Guide'. Interpretation has been left the the individual company completing the census. In addition, no attempt has been made by Statistics Canada, or the provincial data collecting agencies, to verify the accuracy of the numbers submitted; all numbers as reported are accepted as factual.

The census data are intended to be reported on an establishment basis. It is not known, however, whether the numbers submitted by integrated non-ferrous mining, smelting and refining companies represent only estimates of cost pertaining to mining and milling activities only, or if they also include costs pertaining to smelting and refining activities, as well as to outside (off-property) exploration.

The totals by metal mining industry are thus the unverified aggregate of costs as reported by the establishments classified to specific mining industries.

TOTAL METAL MINES: FRINGE BENEFITS COSTS, 1945-1977
(Dollars)

Year	Workmen's Compensation	Silicosis	U.I.C.	C.P.P.	Insurance		Q.P.P	Total
					Government	Private		
1945	1 094 657	370 493	331 855	-	-	-	-	1 797 005
1946	1 277 940	972 273	322 950	-	-	-	-	2 573 163
1947	1 545 247	439 057	342 755	-	-	-	-	2 327 059
1948	1 957 793	491 793	426 393	-	-	-	-	2 875 601
1949	2 037 151	723 669	590 769	-	-	-	-	3 351 589
1950	2 062 668	742 481	731 234	-	-	-	-	3 536 383
1951	1 985 771	842 217	854 821	-	-	-	-	3 682 809
1952	2 148 462	752 143	919 664	-	-	-	-	3 820 269
1953	2 232 975	790 618	934 701	-	-	-	-	3 958 294
1954	2 685 724	879 082	922 158	-	-	-	-	4 486 964
1955	2 644 283	1 024 089	921 840	-	-	-	-	4 590 212
1956	2 879 872	1 283 214	1 095 731	-	-	-	-	5 258 817
1957	3 750 530	1 621 793	1 195 624	-	-	-	-	6 567 947
1958	4 509 687	1 172 313	1 225 248	-	-	-	-	6 907 248
1959	6 200 663	2 739 607	1 491 906	-	-	-	-	10 432 176
1960	5 176 412	2 232 520	1 967 522	-	-	-	-	9 376 454
1961	6 106 591	1 789 979	1 801 008	-	-	-	-	9 697 578
1962	5 777 629	1 778 206	1 665 178	-	-	-	-	9 221 013
1963	4 869 018	1 641 962	1 436 124	-	-	-	-	7 947 104
1964	5 131 945	1 493 842	1 535 401	-	-	-	-	8 161 188
1965	5 154 946	819 976	1 582 092	-	-	-	-	7 557 014
1966	5 237 203	993 630	1 511 641	-	-	-	-	7 742 474
1967	6 756 112	1 797 060	1 490 396	-	-	-	-	10 043 568
1968	6 126 859	1 472 959	1 973 752	-	-	-	-	9 573 570
1969	6 025 765	1 357 304	1 923 291	-	-	-	-	9 306 360
1970	5 501 158	1 252 462	2 238 878	-	-	-	-	8 992 498
1971	7 367 045	1 265 419	2 398 109	-	-	-	-	11 030 573
1972	7 602 164	1 058 618	2 859 687	3 187 399	8 904 972	9 126 977	-	32 398 817
1973	8 127 523	1 221 969	3 073 166	3 116 249	8 663 820	16 192 726	-	40 395 453
1974	11 810 051	1 683 646	5 330 352	3 990 280	9 442 728	19 666 457	224	51 923 738
1975	15 779 544	3 110 902	6 166 179	4 758 380	9 422 828	21 468 558	298	60 706 685
1976	23 719 662	5 510 981	7 846 766	5 320 812	11 678 430	29 461 783	7 047	83 545 481
1977	39 206 289	7 358 326	7 401 647	5 821 434	13 464 153	30 948 525	-	104 200 374

GOLD MINES: FRINGE BENEFITS COSTS, 1945-1977
(Dollars)

Year	Workmen's Compensation	Silicosis	U.I.C.	C.P.P.	Insurance		Total
					Government	Private	
1945	645 288	288 470	142 803	-	-	-	1 076 561
1946	856 306	329 442	175 822	-	-	-	1 361 570
1947	974 440	381 626	169 056	-	-	-	1 525 122
1948	1 143 732	400 460	194 526	-	-	-	1 738 718
1949	1 270 055	615 094	273 830	-	-	-	2 158 979
1950	1 217 855	620 405	319 773	-	-	-	2 158 033
1951	1 144 597	684 409	348 625	-	-	-	2 177 631
1952	1 113 969	684 000	339 057	-	-	-	2 137 026
1953	912 528	701 280	299 371	-	-	-	1 913 179
1954	1 112 985	755 265	288 642	-	-	-	2 156 892
1955	1 257 045	884 836	308 426	-	-	-	2 450 307
1956	1 166 989	972 666	315 689	-	-	-	2 455 344
1957	1 169 213	1 024 415	311 527	-	-	-	2 505 155
1958	1 301 357	1 309 340	324 767	-	-	-	2 935 464
1959	1 545 412	1 381 792	365 730	-	-	-	3 292 934
1960	1 638 210	1 699 581	492 024	-	-	-	3 829 815
1961	1 992 679	1 529 058	470 967	-	-	-	3 992 704
1962	1 946 459	1 496 234	451 970	-	-	-	3 894 663
1963	1 955 499	1 506 400	433 405	-	-	-	3 895 304
1964	1 900 944	1 374 906	421 904	-	-	-	3 275 850
1965	1 769 045	702 615	366 134	-	-	-	2 837 794
1966	2 072 694	765 253	319 679	-	-	-	3 157 626
1967	2 220 976	1 080 451	287 559	-	-	-	3 588 896
1968	2 063 936	1 157 665	300 862	-	-	-	3 522 463
1969	1 934 615	1 053 349	319 819	-	-	-	3 307 783
1970	1 319 212	961 336	277 451	-	-	-	2 557 999
1971	1 154 589	871 464	254 593	-	-	-	2 280 646
1972	1 147 077	567 201	268 221	317 829	545 319	198 140	3 043 787
1973	1 273 743	672 739	319 392	327 816	367 186	372 211	3 333 087
1974	2 072 255	1 066 930	527 441	402 047	683 980	379 743	5 132 396
1975	3 429 048	1 561 114	622 059	483 715	702 840	667 125	7 465 901
1976	3 489 166	1 647 730	656 495	454 700	740 707	518 280	7 507 078
1977	3 745 801	1 546 019	606 947	427 353	877 511	846 985	8 050 616

IRON MINES: FRINGE BENEFITS COSTS, 1945-1977
(Dollars)

Year	Workmen's Compensation	Silicosis	U.I.C.	C.P.P.	Insurance		Total
					Government	Private	
1945	52 424	3 537	14 406	-	-	-	70 367
1946	44 953	4 573	8 322	-	-	-	57 848
1947	61 189	5 147	10 058	-	-	-	76 394
1948	89 439	6 652	12 333	-	-	-	108 424
1949	106 895	7 719	20 994	-	-	-	135 608
1950	132 058	8 727	33 925	-	-	-	174 710
1951	124 219	9 504	30 251	-	-	-	163 974
1952	163 005	11 459	35 079	-	-	-	209 543
1953	218 183	14 707	46 801	-	-	-	279 691
1954	307 339	30 799	48 757	-	-	-	386 895
1955	188 434	21 653	43 025	-	-	-	253 112
1956	281 834	28 753	64 680	-	-	-	375 267
1957	383 511	31 646	75 772	-	-	-	490 929
1958	364 166	58 836	65 281	-	-	-	488 283
1959	347 165	53 983	74 820	-	-	-	475 968
1960	375 629	60 533	122 035	-	-	-	558 197
1961	331 206	66 424	97 498	-	-	-	495 128
1962	308 966	57 859	87 447	-	-	-	454 272
1963	272 110	26 150	84 122	-	-	-	382 382
1964	326 904	11 961	93 672	-	-	-	432 537
1965	325 357	13 758	113 076	-	-	-	542 191
1966	256 964	16 283	117 065	-	-	-	390 312
1967	272 812	33 493	130 978	-	-	-	437 283
1968	311 671	56 353	175 587	-	-	-	543 611
1969	365 827	70 893	191 860	-	-	-	628 580
1970	414 971	88 641	202 125	-	-	-	705 737
1971	429 282	99 581	200 973	-	-	-	729 836
1972	584 756	148 960	289 233	324 122	1 187 728	694 893	3 229 692
1973	799 694	211 555	328 596	354 846	1 030 664	1 767 479	4 492 834
1974	705 630	265 226	484 078	427 164	980 943	1 530 535	4 393 576
1975	825 294	268 903	547 465	500 291	814 346	2 604 668	5 560 967
1976	1 307 795	264 162	780 619	571 359	989 928	3 047 986	6 961 849
1977	1 392 332	292 128	730 398	611 018	1 235 186	3 271 423	7 532 485

OTHER METAL MINES: FRINGE BENEFITS COSTS, 1945-1977
(Dollars)

Year	Workmen's Compensation	Silicosis	U.I.C.	C.P.P.	Insurance		Q.P.P	Total
					Government	Private		
1945	396 945	78 486	174 646	-	-	-	-	650 077
1946	376 681	71 014	138 806	-	-	-	-	586 501
1947	509 618	52 284	163 641	-	-	-	-	725 543
1948	724 622	84 303	219 534	-	-	-	-	1 028 459
1949	660 201	100 856	295 945	-	-	-	-	1 057 002
1950	712 755	113 349	377 536	-	-	-	-	1 203 640
1951	716 955	148 304	475 945	-	-	-	-	1 341 204
1952	871 488	56 684	545 528	-	-	-	-	1 473 700
1953	1 102 264	74 631	588 529	-	-	-	-	1 765 424
1954	1 265 400	93 018	584 759	-	-	-	-	1 943 177
1955	1 198 804	117 600	570 389	-	-	-	-	1 886 793
1956	1 431 049	281 795	715 362	-	-	-	-	2 428 206
1957	2 197 817	565 732	808 325	-	-	-	-	3 571 874
1958	2 844 164	982 543	835 200	-	-	-	-	4 661 907
1959	4 308 086	1 303 832	1 051 356	-	-	-	-	6 663 274
1960	3 162 573	472 406	1 354 463	-	-	-	-	4 989 442
1961	3 782 706	194 497	1 232 543	-	-	-	-	5 209 746
1962	3 522 204	224 113	1 125 761	-	-	-	-	4 872 078
1963	2 641 409	109 412	918 597	-	-	-	-	3 669 418
1964	2 904 097	106 975	1 019 825	-	-	-	-	4 030 897
1965	3 060 544	103 603	1 102 882	-	-	-	-	4 267 029
1966	2 907 545	212 094	1 074 897	-	-	-	-	4 194 536
1967	4 262 324	683 116	1 071 859	-	-	-	-	6 017 299
1968	3 751 252	258 941	1 497 303	-	-	-	-	5 507 496
1969	3 725 323	233 062	1 411 612	-	-	-	-	5 369 997
1970	3 766 975	202 485	1 759 302	-	-	-	-	5 728 762
1971	5 783 174	294 374	1 942 543	-	-	-	-	8 020 091
1972	5 870 331	342 457	2 302 233	2 545 448	7 171 925	8 233 944	-	26 466 338
1973	6 054 086	337 675	2 425 178	2 433 587	7 265 970	14 053 036	-	32 569 532
1974	9 032 166	351 490	4 318 833	3 161 069	7 777 805	17 756 179	224	42 397 766
1975	11 525 202	1 280 885	4 996 655	3 774 374	7 905 642	18 196 765	298	47 679 821
1976	18 922 701	3 599 089	6 409 652	4 294 753	9 947 795	26 413 797	7 047	69 594 834
1977	34 068 156	5 520 179	6 064 302	4 783 063	11 351 456	26 830 117	-	88 617 273

STUDY OF LABOUR COSTS IN THE ONTARIO METAL MINING INDUSTRY

OBJECT OF THE STUDY

The primary object of this study was to obtain a number of series on labour costs incurred by Ontario metal mines over the post war period. Even though wages in this industry are among the highest of any industry either in Ontario or in Canada, little direct information on fringe benefits has been collected. Wages comprise only part of total labour costs. Since 1945 a wide variety of company initiated, collectively-bargained and government-sponsored fringe benefits have been added to total employee compensation. Despite these changes in the level and composition of labour costs there does not exist, at the provincial level, data on employer contributions to private pension plans and other employer initiated fringe benefits. In addition there exists some concern over the accuracy of the published data on employer contributions to voluntary benefit plans in general. This study, then, was undertaken to begin the process of filling in this void.

ORGANIZATION OF THE STUDY

Sample Survey

Since the information required was extremely detailed, it appeared that the only way it could be collected on a consistent basis was to survey a sample of Ontario mining companies. The principle goals of the survey were to obtain an accurate representation of individual industry experiences in employee compensation packages while at the same time keeping the study within it's defined budget limits.

Working within these twin objectives - representativeness and budget constraints - 15 companies were selected for study. Three criteria were used in the selection process:

i start-up date for the mine was 1968 or before (i.e. 10 years of data at least)
ii the mine is currently operating (i.e. in 1980)
iii the mining company has a head office or area office in Toronto

Survey Design

The survey form was designed to cover as comprehensively as possible the various aspects of employee compensation. A copy of the form sent to the individual companies is reproduced in Appendix A of this report. The information requested included average number of employees as well as certain direct labour costs such as gross payroll, pay for time worked, paid time off and other direct payments. To capture the types of fringe benefits paid this segment of the form was divided into two parts: (a) contributions required by law and (b) those provided by the employer. As shown in Appendix A, the level of detail within each of these broad categories of direct and indirect costs was quite extensive. In addition, firms were asked to distinguish between wage earners and salaried employees.

To ensure that the results from the survey were as consistent as possible, definitions of the terms used in the form were sent to each participating employer. These are reproduced in Appendix B and are self-explanatory.

Responses

Completeness

The response by the companies was most gratifying. Of the 15 companies contacted, 14 replied. The level of detail varied quite widely. In some cases evidence was provided for all categories back to 1953. Other replies covered fewer years and were less detailed. Since the objective, at this stage, was to generate enough evidence to provide an outline of broad trends in compensation, the information received amply fulfilled this goal.

Variation in reporting reflected (a) the length of time the firm had been in operation; (b) the availability of staff to collect the data; and (c) the extent to which individual companies kept past records. Every company attempted to provide evidence over the most recent period while all provided detail to the level available in their own records.

Consistency

Although the instructions to the firms clearly stated that the survey was to be confined solely to mining and milling operations, this may not always have been the case. It is possible that in some of the large integrated mining operations compensation paid to workers in smelting and refining operations was included in the totals. For most of the firms sampled, however, this was

not a problem. In fact, much of the evidence was kept at the mine site and so the data automatically excluded compensation for head office personnel, research and development, etc. The level of distortion due to the inclusion of non-mine-site activities appears, therefore, to be small.

Confidentiality

To secure the cooperation of employers it was agreed to report the results in a manner which would not reveal individual company data. Thus specific companies included in the survey have not been named and where less than three respondents were available for a given year or industry group the evidence was aggregated into larger sub-totals. As a result of this guarantee some of the detail available in the industrial reports has been lost.

Appreciation

A great deal of detailed work goes into collecting this type of data. Consequently the study would not have been possible without the willing cooperation of the companies contacted and their employees who traced through detailed records to secure the data requested. We would like to thank the companies, their employees who helped prepare the reports, and Mr. Jim Hughes of the Ontario Mining Association who assisted the study in many ways. Their cooperation made the study possible.

Results

The tabulated results of the survey, appear in the following tables. In accordance with the guarantee of confidentiality, only three industry groups are reported. They are total metal mines reporting, gold and iron mines (combined into a single total) and other metal mines the (sum of silver, uranium, copper-lead-zinc and nickel-copper). For each year the number of companies reporting estimates for that year is shown.

In addition, to provide some perspective on the share of fringe benefits in total compensation, the ratio of these costs to gross payroll for benefit plans required by law, benefits provided by the employer, and the sum of these two are shown in columns marked A, B and C respectively. Caution is advised in interpreting these results since the underlying evidence varies not only due to changes in benefits available but also due to extent of company coverage, size of reporting firm and detail provided on individual item costs. The ratios are useful, however, in delineating broad trends in timing and expenditures levels of fringe benefits relative to direct or gross payroll compensation. This is just one step in the direction of analysis of this rich data base. Much more remains to be done.

APPENDIX A

STUDY OF LABOUR COSTS IN THE ONTARIO METAL MINING INDUSTRY

(Instructions: Fill in the amounts in the appropriate spaces. If no detail is available show category total only and, if known, check the items included in this total)

YEAR _____

COMPANY fiscal year ends _____ (day) _____ (month) Year

The data below are for (check one): _____ fiscal year

_____ calendar year

	Wage Earners (A)	Salaried Employees (B)	Total Employees (C)	Explanation
I. GENERAL DATA				
(01) Annual Average Number of Employees				
II. DIRECT PAYMENTS TO EMPLOYEES				
(02) Gross Payroll (including taxable benefits) -(Dollars)				
(03) Pay for Time Worked -(Dollars)				
(031) Basic Pay				
(032) Overtime				
(033) Shift Work				
(034) Underground Production Bonus				
(035) Other (specify)				
(036) TOTAL [(031 to (035)]				
(04) Paid Time Off -(Dollars)				
(041) Holidays				
(042) Vacation				
(043) Sick Leave				
(044) Personal Leave				
(045) Other (specify)				
(046) TOTAL [(041) to (045)]				
(05) Other Direct -(Dollars)				
(051) Non-production Bonuses				
(052) Profit-sharing Plans				
(053) Savings Plans				
(054) Severance and Termination Pay				
(055) Retirement Allowances				
(056) Taxable Benefits				
(057) Retroactive Pay				
(058) Other (specify)				
(059) TOTAL [(051) to (058)]				
III. EMPLOYER CONTRIBUTIONS TO EMPLOYEE WELFARE AND BENEFIT PLANS				
(06) Payments Required by Law - Dollars				
(061) Workmen's Compensation				
(062) Unemployment Insurance				
(063) Canada Pension Plan				
(064) Silicosis Assessment				
(065) Other (specify)				
(066) TOTAL [(061) to (065)]				
(07) Benefit Plans -(Dollars)				
(071) Private Pension Plans				
(072) Provincial Medical Plans				
(073) Life and Health Insurance				
(074) Industrial Injury Benefits				
(075) Other Benefit Plans or Funds (specify)				
(076) TOTAL [(071) to (075)]				

APPENDIX B

STUDY OF LABOUR COSTS IN THE ONTARIO METAL MINING INDUSTRIES

CONCEPTS AND DEFINITIONS

Ontario metal mining industry in this study refers to Ontario-based mining and milling operations. Nonferrous smelting and refining operations, head office activities, and research and development laboratories are excluded. Coverage of employees is confined to mine sites and milling plants.

Reporting year. Data are requested on an annual basis. Indicate the company's fiscal year at the top of the study form for each year, and whether the reported data are for the fiscal year or the calendar year (if different from the fiscal year). If possible, provide data on a calendar-year basis, and complete returns for each year since 1945.

Wage-earners and salaried employees. Provide separate data for wage-earners (i.e. production and related workers) and for salaried employees. If this distinction is not available, enter data for total employees.

Annual average number of employees. This is computed by summing the monthly number of employees (wage-earners and/or salaried employees) for the reporting year and dividing by twelve (12), even if the mill or plant did not operate every month of the reporting year. Employees at smelters and refineries, head office, and research and development laboratories, are excluded.

Gross payroll is the total of wages or salaries paid to employees before deductions for employee income tax and employee contributions to unemployment insurance, Canada pension plan, and other deductions. Gross payroll covers: pay for time worked; paid time off; and other direct payments. It also includes taxable benefits.

Pay for time worked includes: basic pay; premium pay; and other pay, including allowances.

Basic pay comprises pay at regular or straight-time rates.

Premium pay consists of payments in excess of regular or straight-time rates and includes pay for overtime, shift work, underground production bonus, and other additional items included in pay for time worked such as holiday work, dangerous work and so on.

Paid time off includes paid holidays, vacation, sick leave (excluding industrial injury), and personal leave such as bereavement, jury duty, etc.

Other direct payments include non-production bonuses, profit-sharing and savings plans, severance and termination pay, retirement allowances, payments classed as taxable benefits for income tax purposes, and retroactive pay for a period prior to the reporting (survey) year.

Employer contributions to fringe benefits (indirect payments to employees) include payments required by law and contributions to other benefit plans.

Employer contributions to employee welfare and benefit plans required by law comprise: payments for workmen's compensation; unemployment insurance; Canada pension plan; and silicosis assessment.

Employer contributions to other employee benefit plans comprise: private pension plans; provincial medical care premiums; life, health and other insurance plans; industrial injury benefits; and other private benefit plans or funds.

DIRECT AND INDIRECT LABOUR COSTS, ONTARIO METAL MINING COMPANIES, 1953-1979
BY TOTAL FOR MAJOR CATEGORIES[a]
TOTAL METALS

Year	Number of Firms Reporting	Annual Average Number of Employees (01)	Direct Payments to Employees			
			Gross Payroll (Dollars) (02)	Pay for Time Worked (Dollars) (03)	Paid Time Off (Dollars) (04)	Other Direct (Dollars) (05)
1953	3	15 272	58 075 264	54 515 992	3 306 782	347 700
1954	3	14 265	58 170 525	54 295 954	3 580 795	321 300
1955	3	14 535	58 354 645	54 284 198	3 717 165	323 100
1956	4	15 612	65 892 065	60 674 344	3 943 216	340 500
1957	5	17 281	76 521 487	71 475 816	4 717 251	357 639
1958	5	15 448	62 053 832	56 976 994	4 522 698	361 119
1959	5	17 577	81 000 817	76 155 133	4 333 061	420 497
1960	5	18 167	88 693 973	82 730 891	5 557 045	400 931
1961	5	17 494	88 801 570	82 424 384	5 758 874	411 944
1962	5	14 743	82 657 144	76 050 005	6 053 733	349 966
1963	5	13 936	72 382 425	66 694 120	5 196 889	343 466
1964	6	19 062	100 609 693	83 699 324	6 297 745	388 287
1965	6	20 033	125 968 755	114 775 425	7 320 822	771 750
1966	6	23 028	137 449 919	124 562 786	8 141 263	861 247
1967	6	24 028	171 095 485	164 259 489	13 283 099	991 650
1968	6	25 183	191 182 564	176 009 395	14 638 725	993 577
1969	8	26 417	165 193 681	152 237 403	11 330 981	1 095 847
1970	8	28 825	254 878 593	233 743 612	19 672 434	1 477 025
1971	8	28 936	274 282 382	244 198 751	22 880 848	1 656 560
1972	9	26 324	269 148 273	240 769 921	25 973 349	2 118 853
1973	10	28 056	292 845 731	223 953 199	25 247 035	3 686 975
1974	12	29 994	354 015 175	310 986 545	39 730 303	3 404 233
1975	13	31 693	423 513 195	367 986 592	51 407 523	3 895 013
1976	13	31 128	486 912 571	426 811 666	54 357 222	4 715 258
1977	13	30 302	490 645 403	455 999 952	55 357 299	6 582 461
1978	14	27 549	434 668 595	383 342 924	44 089 383	6 493 060
1979	14	28 380	461 191 029	402 137 900	53 954 527	10 254 123

[a]Figures shown here are the totals for each category. Details of inclusion in each category are given below.

Direct Payment to Employees

Category (03) Pay for Time Worked includes basic pay, overtime, shift work, underground production bonus, and other.

(04) Paid Time Off includes holidays, vacation, sick leave, personal leave and other.

(05) Other Direct includes non-production bonuses, profit sharing plans, savings plans, severance and termination pay, retirement allowances, taxable benefits, retroactive pay and other.

DIRECT AND INDIRECT LABOUR COSTS, ONTARIO METAL MINING COMPANIES, 1953-1979
BY TOTAL FOR MAJOR CATEGORIES[a]
TOTAL METALS (Cont'd)

Year	Employer Contribution to Employee Welfare and Benefit Plans		Share of Employer Contributions (i.e. Employee Welfare and Benefit Plans) to Gross Payroll		
	Payments Required by Law (Dollars) (06)	Benefit Plans (Dollars) (07)	Required by Law (06/02 x 100) (A)	Benefit Plans (07/02 x 100) (B)	Total (A + B) (C)
1953	1 123 508	4 026 612	1.93	6.93	8.86
1954	1 157 620	4 195 329	1.99	7.21	9.20
1955	1 303 091	4 281 192	2.23	7.34	9.57
1956	1 427 691	4 904 942	2.17	7.44	9.61
1957	1 911 713	5 295 450	2.50	6.92	9.42
1958	1 890 145	4 147 522	3.04	6.68	9.72
1959	2 159 493	5 194 099	2.67	6.41	9.08
1960	2 708 327	5 930 539	3.05	6.69	9.74
1961	3 333 083	6 028 784	3.75	6.79	10.54
1962	3 184 982	5 550 580	3.85	6.72	10.57
1963	2 606 363	4 061 946	3.60	5.61	9.21
1964	3 147 990	6 487 498	3.13	6.45	9.58
1965	3 353 745	7 788 327	2.66	6.18	8.84
1966	5 222 512	7 513 085	3.80	5.47	9.27
1967	5 956 814	9 019 468	3.48	5.27	8.75
1968	6 270 299	10 895 693	3.28	5.70	8.98
1969	5 984 908	10 945 204	3.62	6.63	10.25
1970	8 551 196	20 507 800	3.35	8.05	11.40
1971	10 667 322	24 757 881	3.89	9.03	12.92
1972	10 635 381	28 015 148	3.95	10.41	14.36
1973	12 037 135	37 846 102	4.11	12.42	17.03
1974	18 760 680	43 399 812	5.30	12.26	17.56
1975	29 154 820	51 546 660	6.88	12.17	19.05
1976	41 208 258	70 583 641	8.46	14.50	22.96
1977	51 499 047	76 133 308	10.50	15.52	26.02
1978	39 074 604	64 781 010	8.99	14.90	23 89
1979	39 582 828	76 225 374	8.58	16.53	25.11

[a]Figures shown here are the totals for each category. Details of inclusion in each category are given below.

Employer Contribution to Employee Welfare Benefit Plans

Category (06) Payments Required by Law includes Workmen's Compensation, Unemployment Insurance, Canada Pension Plan, Silicosis Assessment and other.

(07) Benefit Plans includes private pension plans, provincial medical plans, life and health insurance, industrial injury benefits, and other benefit plans or funds.

DIRECT AND INDIRECT LABOUR COSTS, ONTARIO METAL MINING COMPANIES, 1953-1979
BY TOTAL FOR MAJOR CATEGORIES[a]
GOLD AND IRON

Year	Number of Firms Reporting	Annual Average Number of Employees (01)	Direct Payments to Employees			
			Gross Payroll (Dollars) (02)	Pay for Time Worked (Dollars) (03)	Paid Time Off (Dollars) (04)	Other Direct (Dollars) (05)
1953	b	b	b	b	b	b
1954	b	b	b	b	b	b
1955	b	b	b	b	b	b
1956	2	1 345	5 732 506	5 193 544	164 216	-
1957	2	1 642	6 911 756	6 284 310	185 168	-
1958	2	1 636	7 270 169	6 473 476	229 266	2 610
1959	2	1 643	7 538 075	6 755 190	254 555	2 514
1960	2	1 732	7 892 063	7 216 951	270 319	5 649
1961	2	1 691	8 070 135	7 121 754	306 415	7 899
1962	2	1 574	7 230 038	6 347 993	299 008	9 966
1963	2	1 362	6 541 903	5 745 170	275 413	11 662
1964	2	1 224	6 024 232	5 334 859	250 483	11 690
1965	2	1 091	5 471 741	4 932 504	225 636	16 975
1966	2	952	5 485 853	4 815 240	210 987	25 749
1967	2	926	5 655 025	4 898 491	211 517	16 947
1968	2	988	6 030 638	5 133 107	263 970	4 954
1969	3	1 338	8 803 646	7 795 848	413 592	5 903
1970	3	1 227	8 380 044	7 514 641	439 867	8 801
1971	3	1 195	8 796 667	7 790 447	467 977	6 783
1972	4	1 521	13 009 321	11 741 883	698 754	140 732
1973	4	1 549	14 694 752	10 174 483	875 063	183 810
1974	5	2 931	30 381 703	28 073 900	1 565 795	758 952
1975	5	2 955	37 665 873	34 452 809	2 033 774	1 129 125
1976	5	2 660	39 775 646	35 987 471	2 459 995	1 259 341
1977	5	2 424	41 317 097	37 295 694	2 566 397	1 401 009
1978	6	3 241	51 272 187	46 585 446	3 442 602	1 303 975
1979	6	3 225	43 871 091	40 380 346	4 315 972	3 693 112

[a]Figures shown here are the totals for each category. Details of inclusion in each category are given in footnote to Total Metals table (p. 154).
[b]For reasons of confidentiality, only figures for Total Metals are given for these years.

DIRECT AND INDIRECT LABOUR COSTS, ONTARIO METAL MINING COMPANIES, 1953-1979
BY TOTAL FOR MAJOR CATEGORIES[a]
GOLD AND IRON (Cont'd)

Year	Employer Contribution to Employee Welfare and Benefit Plans		Share of Employer Contributions (i.e. Employee Welfare and Benefit Plans) to Gross Payroll		
	Payments Required by Law (Dollars) (06)	Benefit Plans (Dollars) (07)	Required by Law (06/02 x 100) (A)	Benefit Plans (07/02 x 100) (B)	Total (A + B) (C)
1953	b	b	-	-	-
1954	b	b	-	-	-
1955	b	b	-	-	-
1956	328 027	134 842	5.72	2.34	8.06
1957	394 371	155 263	5.70	2.24	7.94
1958	456 611	215 797	6.27	3.00	9.27
1959	503 078	130 415	6.67	1.72	8.39
1960	369 291	148 638	4.68	1.89	6.57
1961	633 615	130 409	7.84	1.61	9.45
1962	569 479	155 213	7.87	2.14	10.01
1963	528 056	157 877	8.07	2.42	10.49
1964	467 896	150 354	7.77	2.49	10.26
1965	323 154	157 591	5.90	2.89	8.79
1966	557 928	130 856	10.17	2.39	12.56
1967	667 856	141 827	11.81	2.51	14.32
1968	751 199	171 151	12.45	2.84	15.29
1969	849 583	386 562	9.65	4.40	14.05
1970	696 341	407 801	8.31	4.86	13.17
1971	674 396	422 483	7.66	4.80	12.46
1972	776 065	798 784	5.97	6.14	12.11
1973	935 928	824 088	6.37	5.61	11.98
1974	2 626 969	1 397 274	8.65	4.60	13.25
1975	3 988 886	1 791 508	10.59	4.76	15.35
1976	4 376 315	2 116 276	11.00	5.32	16.32
1977	4 541 610	2 458 232	10.99	5.95	16.94
1978	5 487 817	3 139 426	10.70	6.12	16.82
1979	6 528 062	4 133 999	14.88	9.42	24.30

[a]Figures shown here are the totals for each category. Details of inclusion in each category are given in footnote to Total Metals table (p. 155).
[b]For reasons of confidentiality, only figures for Total Metals are given for these years.

DIRECT AND INDIRECT LABOUR COSTS, ONTARIO METAL MINING COMPANIES, 1953-1979
BY TOTAL FOR MAJOR CATEGORIES[a]
OTHER METALS[b]

Year	Number of Firms Reporting	Annual Average Number of Employees (01)	Direct Payments to Employees			
			Gross Payroll (Dollars) (02)	Pay for Time Worked (Dollars) (03)	Paid Time Off (Dollars) (04)	Other Direct (Dollars) (05)
1953	c	c	c	c	c	c
1954	c	c	c	c	c	c
1955	c	c	c	c	c	c
1956	2	14 267	60 159 559	55 480 800	3 779 000	340 500
1957	3	15 639	69 609 731	65 191 506	4 532 083	357 639
1958	3	13 812	54 783 663	50 503 518	4 293 432	358 509
1959	3	15 934	73 462 742	69 399 943	4 078 506	417 983
1960	3	16 435	80 801 910	75 531 940	5 286 726	395 282
1961	3	15 803	80 731 435	75 302 630	5 452 459	404 045
1962	3	13 169	75 427 106	69 702 012	5 754 725	340 000
1963	3	12 574	65 840 522	60 948 950	4 921 476	331 804
1964	4	17 838	94 567 461	78 364 465	6 047 262	376 597
1965	4	18 942	120 497 014	109 842 921	7 095 186	754 777
1966	4	22 076	131 964 066	119 747 546	7 930 276	835 498
1967	4	23 102	165 440 460	159 360 998	13 071 582	974 703
1968	4	24 195	185 151 926	170 876 288	14 374 755	988 623
1969	5	25 079	156 390 035	144 441 555	10 917 389	1 089 944
1970	5	27 598	246 498 549	226 228 971	19 232 567	1 468 224
1971	5	27 741	265 485 715	236 408 304	22 412 871	1 649 777
1972	5	24 803	256 138 952	229 028 038	25 274 595	1 978 121
1973	6	26 507	278 150 979	213 778 716	24 371 972	3 503 165
1974	7	27 063	323 633 472	282 912 645	38 164 508	2 645 275
1975	8	28 738	385 847 322	333 533 783	49 373 749	2 765 888
1976	8	28 468	447 136 925	390 824 195	51 897 227	3 455 917
1977	8	27 878	449 328 306	418 704 258	52 790 902	5 181 452
1978	8	24 318	383 396 408	336 757 478	40 646 781	5 189 085
1979	8	25 155	417 319 938	361 757 554	49 638 555	6 561 011

[a]Figures shown here are the totals for each category. Details of inclusion in each category are given in footnotes to Total Metals table (p. 154).
[b]'Other Metals' include silver, uranium, copper-lead-zinc, and nickel-copper companies.
[c]For reasons of confidentiality, only figures for total metals are given for these years.

DIRECT AND INDIRECT LABOUR COSTS, ONTARIO METAL MINING COMPANIES, 1953-1979
BY TOTAL FOR MAJOR CATEGORIES[a]
OTHER METALS[b] (Cont'd)

Year	Employer Contribution to Employee Welfare and Benefit Plans		Share of Employer Contributions (i.e. Employee Welfare and Benefit Plans) to Gross Payroll		
	Payments Required by Law (Dollars) (06)	Benefit Plans (Dollars) (07)	Required by Law (06/02 x 100) (A)	Benefit Plans (07/02 x 100) (B)	Total (A + B) (C)
1953	[c]	[c]	-	-	-
1954	[c]	[c]	-	-	-
1955	[c]	[c]	-	-	-
1956	1 099 664	4 770 100	1.83	7.93	9.76
1957	1 517 342	5 140 187	2.18	7.38	9.56
1958	1 433 534	3 931 725	2.67	7.18	9.80
1959	1 656 415	5 063 684	2.25	6.89	9.14
1960	2 339 036	5 781 901	2.89	7.16	10.05
1961	2 699 468	5 898 375	3.34	7.31	10.65
1962	2 615 503	5 395 367	3.47	7.15	10.62
1963	2 078 307	3 904 069	3.16	5.93	9.09
1964	2 680 093	6 337 144	2.83	6.70	9.53
1965	3 030 591	7 630 736	2.52	6.33	8.85
1966	4 664 584	7 382 229	3.54	5.59	9.13
1967	5 288 958	8 877 641	3.20	5.37	8.57
1968	5 519 100	10 724 542	2.98	5.79	8.77
1969	5 135 325	10 558 642	3.28	6.75	10.03
1970	7 854 855	20 099 999	3.19	8.15	11.34
1971	9 992 926	24 324 398	3.76	9.16	12.92
1972	9 859 316	27 216 364	3.85	10.63	14.46
1973	11 101 207	37 022 014	3.99	13.31	17.30
1974	16 133 711	42 002 538	4.99	12.98	17.97
1975	25 165 934	49 755 152	6.52	12.90	19.42
1976	36 831 943	68 461 365	8.24	15.31	23.55
1977	46 957 437	73 675 076	10.45	16.40	26.85
1978	33 586 787	61 641 584	8.76	16.08	24.84
1979	33 054 766	72 091 375	7.92	17.27	25.19

[a]Figures shown here are the totals for each category. Details of inclusion in each category are given in footnotes to Total Metals table (p. 155).
[b]'Other Metals' include silver, uranium, copper-lead-zinc, and nickel-copper companies.
[c]For reasons of confidentiality, only figures for total metals are given for these years.

GENERAL NOTES ON SELECTED ECONOMIC INDICATORS

Data for this section have been drawn together to provide a set of selected economic indicators for the Canadian economy over the post war period. The purpose for collecting this series is to give perspective to the data on Ontario metal mining. Four economic series are given. They are monetary aggregate (i.e. Canadian money supply - MI), Canadian bond yields, price indexes and foreign exchange rates.

Statistics for this section were drawn from standard sources for economic data series in Canada. The specific sources and notes regarding the construction of the series reported are set out with each table.

MONETARY AGGREGATE - CANADIAN MONEY SUPPLY (M1)

SOURCES

1953 to 1956: Cansim Programme, Series B1609; 1956 to 1958: Bank of Canada Statistical Summary, 1967 Supplement, page 40; 1959 to 1969: Bank of Canada Statistical Summary, 1969 Supplement, page 40; 1970 to 1972: Bank of Canada Statistical Summary, annually; 1973 to 1980: Bank of Canada Review, annually.

DEFINITIONS

Canadian Money Supply (M1) comprises currency outside banks plus Canadian dollar deposits at chartered banks.

Note

Some differences occur between the Cansim figures (Statistics Canada Programme) and the Bank of Canada figures. Thus the decision was made to use the Bank of Canada figures as far back as possible and the Cansim figures when necessary (1953 to 1956). Figures are not available prior to 1953.

CANADIAN MONEY SUPPLY (M1) 1953-1980
(Millions of Dollars)

Year	M1 Currency and Demand Deposits[a]
1953	4 130
1954	4 372
1955	4 687
1956	4 644
1957	4 668
1958	5 278
1959	5 090
1960	5 342
1961	5 677
1962	5 894
1963	6 108
1964	6 403
1965	6 930
1966	7 475
1967	8 068
1968	8 592
1969	8 910
1970	9 362
1971	10 993
1972	12 486
1973	13 972
1974	14 821
1975	18 238
1976	18 638
1977	20 810
1978	22 474
1979	23 365
1980	26 697

[a]A value for December of each year was taken, using the latest revised figures for each.

CANADIAN BOND YIELDS

1. GOVERNMENT OF CANADA LONG TERM AVERAGE YIELD

SOURCE

Cansim Series B14031, Government of Canada Bond Yield Averages, 10 years and over (percent); Canadian Statistical Review, annual supplement 1979, page 46; Bank of Canada Review.

DEFINITION

The long-term average yield is an average of all direct Government of Canada issues due or callable in 10 years or over, excluding perpetuals.

2. McLEOD, YOUNG, WEIR BOND YIELD AVERAGE

SOURCE

Bond Yield Average Ten Provincials, percent, Cansim Series 14014; Bond Yield Average Ten Industrial, percent, Cansim Series 14016; Bank of Canada Statistical Summary and Review.

3. GOVERNMENT OF CANADA 91-DAY TREASURY BILL TENDER RATE

SOURCE

1946-1978: Cansim Series 14001; Bank of Canada Review, June 1980.

DEFINITION

Treasury Bills are Government of Canada securities. The yields are direct debt payable in Canadian dollars. Treasury bills are sold by tender at weekly auctions, held on Thursdays. Bids may be submitted by the Bank of Canada, the chartered banks and investment dealers who are primary distributors of Government of Canada securities. Treasury bills are sold at a discount and the yields are calculated as the amount of the discount from par relative to the amount paid, on the basis of a 365-day year. The weekly treasury bill tender rate is a weighted average of the yields on successful bids. See Bank of Canada Review, June 1980, S148.

LONG TERM AVERAGE BOND YIELDS
(Percent, Average for December of Each Year)

Year	Government of Canada Long Term Average Yield[a] (1)	McLeod, Young, Weir Average[b]	
		Ten Provincials (2)	Ten Industrials (2)
1945	2.83	-	-
1946	2.60	-	-
1947	2.56	-	-
1948	2.93	3.17	3.61
1949	2.79	3.02	3.51
1950	3.01	3.26	3.58
1951	3.49	4.21	4.44
1952	3.61	4.15	4.43
1953	3.61	4.07	4.48
1954	3.13	3.34	4.00
1955	3.40	3.82	4.15
1956	3.97	5.03	5.22
1957	3.78	4.60	5.04
1958	4.61	5.14	5.22
1959	5.45	6.12	6.14
1960	5.31	5.68	5.61
1961	4.93	5.36	5.33
1962	5.10	5.44	5.38
1963	5.15	5.53	5.39
1964	5.03	5.41	5.47
1965	5.40	5.90	6.05
1966	5.76	6.63	6.83
1967	6.54	7.29	7.59
1968	7.27	7.92	8.18
1969	8.33	9.19	9.29
1970	6.99	8.25	8.83
1971	6.56	7.75	8.24
1972	7.12	7.91	8.15
1973	7.70	8.70	8.81
1974	8.77	10.12	10.72
1975	9.49	10.51	11.06
1976	8.47	9.39	9.83
1977	8.77	9.49	9.71
1978	9.68	10.19	10.34
1979	11.32	-	-

[a]A value was taken for December of each year. This value is unadjusted for seasonal variation.
[b]A value was taken for December of each year. The yields shown here refer to the last business day of the month. The average of the terms to maturity of the bonds in each series has recently been about 20 years. (Bank of Canada Statistical Summary, January 1971, page 33.)

91-DAY TREASURY BILL TENDER RATE, 1946-1979
(Percent, Average for December of Each Year)

Year	Government of Canada Treasury Bill Tender Rate 91-Day[c] (3)
1945	-
1946	.40
1947	.41
1948	.41
1949	.51
1950	.63
1951	.90
1952	1.30
1953	1.88
1954	1.36
1955	2.59
1956	3.61
1957	3.65
1958	3.46
1959	5.02
1960	3.61
1961	2.82
1962	3.88
1963	3.71
1964	3.85
1965	4.45
1966	5.07
1967	5.73
1968	5.96
1969	7.78
1970	4.47
1971	3.25
1972	3.66
1973	6.38
1974	7.32
1975	8.58
1976	8.41
1977	7.18
1978	10.43
1979	13.66

[c]The value shown is for the Thursday tender following the last Wednesday in December of each year.

PRICE INDEXES - CANADA

1. WHOLESALE PRICE INDEX

SOURCES

Canada Statistical Review, Historical Summary 1970, (Cat.11-502), page 66; Canada Year Book, 1978-79, page 866.

2. CONSUMER PRICE INDEX

SOURCE

1945-1965: Canadian Statistical Review Historical Summary 1970, (Cat. 11-502), page 68 (1961 = 100); 1965-1978: Canada Year Book 1978-79, page 865, (1971 = 100); 1979-1980: Bank of Canada Review, January 1981, table 62.

Note

In order to provide a series with a single base year it was necessary to link the series for years 1945-1965 (1961 = 100), with series for years 1965-1980 (1971 = 100). The resulting series was constructed by using the overlapping years between the two series (1965-1970). The formula adopted is as follows:

$$\frac{A}{B} \times 100 = R$$

where A = the value of the price index when 1961 = 100
B = the 1961 value when 1971 = 100
R = the value of the price index when 1971 = 100.

3. GNE DEFLATOR

SOURCE

National Income and Expenditure Accounts, Annual Estimates: 1926-1974 Volume, pages 110 and 210; 1965-1979 Volume, page 8.

Note

The GNE Deflator is an implicit price index where the weights used to construct the index are based on current values. The index then reflects not only pure price changes but also changing expenditure patterns within and between major groups. It is derived by dividing the total expenditure in current dollars by the total in constant dollars.

PRICE INDEXES - CANADA, 1945-1980

Year	Wholesale Price Index (1935-39 = 100)[a] (1)	Consumer Price Index (1971 = 100) (2)	GNE Deflator (1971 = 100) (3)
1945	132.1	43.5	40.8
1946	138.9	45.0	42.0
1947	163.3	49.2	45.7
1948	193.4	56.3	51.3
1949	198.3	58.0	53.5
1950	211.2	59.7	54.8
1951	240.2	66.0	61.0
1952	226.0	67.6	63.7
1953	220.7	67.0	63.6
1954	217.0	67.4	64.6
1955	218.9	67.5	65.0
1956	225.6	68.5	67.4
1957	227.4	70.7	68.8
1958	227.8	72.6	69.8
1959	230.6	73.4	71.2
1960	230.9	74.3	72.1
1961	233.3	75.0	72.4
1962	240.0	75.9	73.4
1963	244.6	77.2	74.8
1964	245.4	78.6	76.6
1965	250.4	80.5	79.1
1966	259.5	83.5	82.6
1967	264.1	86.5	85.9
1968	269.9	90.0	88.7
1969	282.4	94.1	92.6
1970	286.4	97.2	96.9
1971	289.9	100.0	100.0
1972	310.3	104.8	105.0
1973	376.9	112.7	114.6
1974	461.3	125.0	132.1
1975	491.6	138.5	143.3
1976	512.4	148.9	160.2
1977	559.3p	160.8	171.4
1978[a]	-	175.1	182.3
1979	-	191.2	201.1
1980	-	210.6	-

[a]A wholesale price index is not published after 1977. In its place Statistics Canada publishes a series entitled 'Aggregate Industry Selling Price' (Cat. 62-001).
p = preliminary

PRICE INDEXES - UNITED STATES

1. WHOLESALE PRICE INDEX OR PRODUCER PRICE INDEX

SOURCES

Historical Statistics of the United States, Colonial Times to 1970, Volume I, U.S. Bureau of the Census, for years 1945 to 1970; Statistical Abstract of the U.S., 1981, for years 1970 to 1980.

Note

This index was orginally known as the 'Wholesale Price Index' but is now termed the 'Producer Price Index'. This is the oldest continuous statistical series published by the U.S. Bureau of Labour Statistics. It is designed to measure average changes in prices of all commodities, at all stages of processing, produced or imported for sale in primary markets in the U.S.

2. CONSUMER PRICE INDEX

SOURCES

Historical Statistics of the U.S., Colonial Times to 1970, Volume I, Bureau of the Census, for years 1945 to 1970; Statistical Abstract of the U.S., 1981, for years 1970 to 1980.

3. G.D.P. IMPLICIT PRICE DEFLATOR

SOURCES

Historical Statistics of the United States, Colonial Times to 1970 (1958=100); Statistical Abstract of the U.S., 1981, for years 1970 to 1980.

Note

The implicit deflator for total gross national product (GNP) is the ratio of GNP in current prices to GNP in constant prices. It is a weighted average of the price indexes used to deflate the components of GNP; the implicit weights are expenditures in the current period valued in prices of the base year. In order to provide a series with a single base year it was necessary to link the series for the years 1945 to 1970 (1958=100) with the series 1970 to 1980 (1972=100). A series was constructed with base year 1972=100 for the whole period 1945 to 1980.

PRICE INDEXES - UNITED STATES, 1945-1980

Year	Wholesale Price Index (1967 = 100) (1)	Consumer Price Index (1967 = 100) (2)	GNP Implicit Price Deflator (1972 = 100) (3)
1945	54.6	53.9	40.4
1946	62.3	58.5	45.1
1947	76.5	66.9	50.4
1948	82.8	72.1	53.8
1949	78.7	71.4	53.5
1950	81.8	72.1	54.2
1951	91.1	77.8	57.9
1952	88.6	79.5	59.2
1953	87.4	80.1	59.7
1954	87.6	80.5	60.6
1955	87.8	80.2	61.5
1956	90.7	81.4	63.6
1957	93.3	84.3	65.9
1958	94.6	86.6	67.6
1959	94.8	87.3	68.7
1960	94.9	88.7	69.8
1961	94.5	89.6	70.7
1962	94.8	90.6	71.5
1963	94.5	91.7	72.5
1964	94.7	92.9	73.6
1965	96.6	94.5	74.9
1966	99.8	97.2	77.0
1967	100.0	100.0	79.0
1968	102.5	104.2	82.6
1969	106.5	109.8	86.7
1970	110.4	116.3	91.4
1971	114.0	121.3	96.0
1972	119.1	125.3	100.0
1973	134.7	133.1	105.8
1974	160.1	147.7	116.0
1975	174.9	161.2	127.2
1976	183.0	170.5	133.7
1977	194.2	181.5	141.7
1978[a]	209.3	195.4	152.1
1979	235.6	217.4	165.5
1980	268.8	246.8	177.4

FOREIGN EXCHANGE RATES

A. U.S. Dollar and U.K. Pound

SOURCE

Bank of Canada Statistical Summary, for years 1945 to 1970; Bank of Canada Review, for years 1970 to 1980.

B. French Franc, German Mark, Japanese Yen, and Swiss Franc

SOURCE

'Currency Conversion Tables', R.L. Bidwell (Rex Collings Ltd., London, England) as basis for calculations of exchange rates for years 1945 to 1960; Bank of Canada Review, for years 1960 to 1980.

Notes

1. In 1945 the Allies introduced a military rate of 10 German marks to $1 U.S. This continued until the currency reform and the introduction of the Deutschmark (1947).

2. In 1945 the Allies introduced a military rate of 15 Japanese yen to $1 U.S. This continued until 1947.

3. For the years 1948 and 1957, a weighted average was used in calculating the exchange rate of the French franc to $U.S.

4. Beginning in 1960, the rate is quoted in terms of new francs (1 new franc = 100 old francs).

FOREIGN EXCHANGE RATES, 1945-1980
(Canadian Cents per U.S. Dollar, U.K. Pound, French Franc, German Mark, Japanese Yen, and Swiss Franc)

Year	U.S. Dollars in Canada	U.K. Pounds in Canada	French Franc in Canada	German Mark in Canada	Japanese Yen in Canada	Swiss Franc in Canada
1945	110.45	444.78	2.22	11.05[1]	7.3638[2]	25.77
1946	105.75	425.54	0.8864	10.57	2.1151	24.75
1947	100.25	403.00	0.8403	10.02	0.3713	23.31
1948	100.25	403.00	0.4038[3]	30.96	0.2785	23.31
1949	103.08	376.13	0.2945	24.57	0.2863	23.98
1950	108.92	304.44	0.3112	25.91	0.3026	25.38
1951	105.28	294.68	0.3008	25.06	0.2924	24.10
1952	97.89	273.40	0.2797	23.31	0.2719	22.83
1953	98.34	276.66	0.2810	23.42	0.2732	22.94
1954	97.32	273.39	0.2780	23.15	0.2703	22.73
1955	98.63	275.35	0.2818	23.47	0.2740	23.04
1956	98.41	275.16	0.2812	23.42	0.2734	22.99
1957	95.88	267.88	0.2529[3]	22.83	0.2663	22.42
1958	97.06	272.76	0.2311	23.09	0.2696	22.57
1959	95.90	269.39	0.1957	22.94	0.2664	22.22
1960	96.97	272.28	19.78[4]	23.25	0.2694	22.45
1961	101.32	283.95	20.65	25.22	0.2814	23.45
1962	106.89	300.15	21.81	26.74	0.2969	24.72
1963	107.85	302.01	22.01	27.06	0.2996	24.96
1964	107.86	301.18	22.01	27.14	0.2996	24.97
1965	107.80	301.43	22.00	26.99	0.2995	24.91
1966	107.73	300.90	21.93	26.94	0.2975	24.90
1967	107.87	296.58	21.93	27.06	0.2979	24.93
1968	107.75	257.94	21.76	26.99	0.2989	24.96
1969	107.68	257.39	20.78	27.46	0.3005	24.97
1970	104.40	250.16	18.89	28.63	0.2916	24.22
1971	100.98	246.87	18.33	29.00	0.2912	24.56
1972	99.05	247.97	19.65	31.08	0.3270	25.94
1973	100.01	245.33	22.57	37.82	0.3696	31.75
1974	97.80	228.84	20.35	37.85	0.3354	32.95
1975	101.73	225.94	23.77	41.44	0.3430	39.42
1976	98.61	178.11	20.67	39.20	0.3327	39.47
1977	106.35	185.71	21.65	45.86	0.3980	44.44
1978	114.02	218.90	25.35	56.91	0.5480	64.32
1979	117.15	248.55	27.54	63.94	0.5375	70.46
1980	116.90	271.96	27.71	64.44	0.5183	69.86
1981	119.90	242.87	23.07	53.18	0.5450	61.22

ADDITIONAL REFERENCES FOR STATISTICAL MATERIAL

This section outlines major sources for mining data available in addition to the ones used in this study. The sources are divided into three sections: (A) Canadian; (B) U.S.: and (C) International.

This bibliography was prepared using the resources of the library of Energy, Mines and Resources, Ottawa. Only the major sources are included here. Additional material for specific countries or specific metals may be obtained from EMR or other mining libraries.

A. CANADIAN SOURCES

1. The Canadian Mines Handbook (Northern Miner Press)

   This is an annual publication which gives detailed information about all Canadian Mining companies.

2. Canadian Minerals Yearbook (published by EMR)

   This annual publication gives a comprehensive report of developments in the mineral industry during the year.

3. Historical Statistics of Canada (Urquhart and Buckley, MacMillan)

   A wide range of statistical time series along with material describing the series covering, where possible, the period from 1867 to 1960 are included in this volume. Section N covers mineral and fuel statistics.

4. The Northern Miner (Northern Miner Press, Toronto)

   This is a publication giving detailed company reports, market information, and news related to the mineral industry.

5. The Financial Post. Survey of Mines and Energy Resources (MacLean Hunter, Toronto)

   This annual publication gives a comprehensive review of the mining and energy industries in Canada. Details of operations, management and financial status of mining companies are included.

6. Financial Post Corporation Service (Toronto)

   This service supplies continuous investment information on Canadian securities.

B. U.S. SOURCES

1. The Historical Statistics of the United States, Colonial Times to 1970 (published by the U.S. Bureau of the Census), Part I 'Minerals'

2. The Annual Statistical Supplement to the Historical Statistics of the U.S. (U.S. Bureau of the Census)

   The above publications give production and consumption figures as well as a breakdown of principal expenses, employment, capital expenditure, etc.

   The principal sources for these series are the two publications following below.

3. Mineral Resources of the United States, published annually 1882-1931.

4. Mineral Yearbook, published annually since 1932-33.

5. U.S. Bureau of Metal Statistics Yearbook, 1920-Present.

   This annual volume is published by a non-profit statistical bureau supported by nonferrous metal producers. It endeavors to present a complete statistical picture with respect to the economics of the nonferrous metals on a world-wide basis.

6. Engineering and Mining Journal, Annual Review and Outlook (New York)

C. INTERNATIONAL SOURCES

1. Metallgesellschaft Aktiengesellschaft (published by Metallgeselischaft, Germany)

   This is an annual publication of metal statistics. It gives production and consumption data, 1890 to the present, on a world-wide basis.

2. Metals Week (published by Metals Week, McGraw-Hill)

   This is a weekly newsletter reporting news affecting the world nonferrous metals industry, with special emphasis on prices and marketing information.

3. Metals Week Price Handbook (published by Metals Week, McGraw-Hill)

   This is a 210-page book published each spring containing nonferrous metals prices for the previous year. It is available from 1973 to present.

4. Mining International Yearbook, Walter Skinner (published by Financial Times, London, England)

   This annual pubication contains particulars of the principal companies and other international companies associated with the mining industry. It is an acknowledged reference work with wide and detailed coverage.

5. World Nonferrous Metal Production (1700-1976) and Prices (1700-1976), Christopher J. Schultz (published by Frank Cass and Co. Ltd., Great Britain, 1979)

   This book includes information on mine and smelter production and average annual prices on major markets for metals such as copper, gold, silver, etc, together with a brief analysis of changing production patterns and trends through time. It also includes an extensive bibliography covering information on specific metals.

6. Metal Statistics (American Metal Market, Fairchild Publications Inc., New York)

   This is an annual publication and is a purchasing guide to the metal industries. It includes production, consumption and price data.

7. Mining Annual Review (published by the Mining Journal, London, England)

   This publication is a review of metals and minerals by countries, with commentary on the outlook for these industries.

8. Metals and Minerals: World Directory of Statistical Sources (Roskill Information Service, London)

   This is a source book of statistical material available for metals and minerals. It gives details on sources for world production, exports and imports, etc. It is an annual publication.

9. Metal Handbook and Statistics (1915-67) and Metal Bulletin Handbook (1968-present) (Quin, London, Metals Information Bureau)

   This is an annual publication.

10. Statistical Summary of the Mineral Industry of the British Empire and Foreign Countries (1913-44); and Statistical Summary of the Mineral Industry: World Production, Exports and Imports (Geological Survey: 1945 to present)

11. Statistical Yearbook (United Nations, New York)

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Mineral Resources Branch

Occasional Papers

OP No. 1: Royal Ontario Nickel Commission (1917) - Report & Appendix. Original printing. 748 pages of text and appendices plus coloured maps. Cloth Bound $40.00

OP No. 2: The Ontario Metal Mining Industry - Present and Future. A discussion paper prepared by the Mineral Resources Branch. February, 1977 no charge

OP No. 3: Andrew J. Freyman: The Role of Smaller Enterprises in the Canadian Mineral Industry with a Focus on Ontario. 1978 $10.00

OP No. 4: B.A. Kalymon, P.J. Halpern, J.D. Quirin and W.R. Waters: Financing of the Junior Mining Company in Ontario. 1978. $10.00

OP No. 5: The Decline of Small Mineral Enterprises in Ontario. A discussion paper prepared by the Mineral Resources Group. August 1978. no charge

OP No. 6: K.S. Rachamalla, D.H. Bell: The Ontario Zinc Industry on a global scene and various government policies, 11th Commonwealth Mining and Metallurgical Congress. 1978. no charge

OP NO. 7: Monenco Ontario Limited: Evaluation of the Potential of Peat in Ontario. November, 1981 $20.00

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Mineral Policy Background Papers

No. 1: G. Anders, W.P. Gramm, S.C. Maurice: The Impact of Taxation and Environmental Controls on the Ontario Mining Industry - A Pilot Study, 1975. $3.00

No. 2: Staff, Metallic Minerals Section, Mineral Resources Branch: Towards an Iron Ore Policy for the Province of Ontario, 1975. $2.00
(out of print)

No. 3: K.S. Rachamalla, D.H. Bell: Towards a Zinc Policy for the Province of Ontario, 5509(11/76) $12.00

No. 4: T.P. Mohide,C.L. Warden,J.D. Mason: Towards a Nickel Policy for the Province of Ontario, 5692(12/77) $25.00

No. 5: G. Anders, W.P. Gramm, S.C. Maurice, C.W. Smithson: Investment Effects on the Mineral Industry of Tax and Environmental Policy Changes: A Simulation Model. 5745(08/78) $5.00

No. 6: C.W. Smithson, G. Anders, W.P. Gramm, S.C. Maurice: Factor Substitution and Biased Technical Change in the Canadian Mining Industry.5784(5/79) $5.00

No. 7: T.P. Mohide: The Platinum Group Metals - Ontario and the World. 5783(5/79) $25.00

No. 8: C.W. Smithson, G. Anders, W.P. Gramm, S.C. Maurice: World Mineral Markets - An Econometric and Simulation Analysis. 5785(5/79) $15.00

No. 9: P.B. Hildebrand, L.J. Prosch: Guide to Legislation Affecting Mining in Ontario. 5795(5/79) $15.00

No. 10: G. Anders, T.P. Mohide: The Future of Nickel and The Law of the Sea. 5824(2/80) $1.00

No. 10: G. Anders, T.P. Mohide: L'avenir du nickel et le droit de la mer. 5824(2/80) $1.00

No. 11: Centre for Resource Studies, Queen's University, and Staff, Metallic Minerals Section, Mineral Resources Branch: Ontario Mining Statistics, A Preliminary Compendium. 5833(04/80) $5.00

No. 12: T.P. Mohide: Gold. 5149 (08/81) $30.00

No. 13: O.J.C. Runnalls: Ontario's Uranium Mining Industry - Past, Present and Future. 5085(07/81) $25.00

No. 14: C.W. Smithson, G. Anders, Hae Shin Hwang, R.D. Martin: World Mineral Markets - - Stage II - An Econometric and Simulation Approach to the World Markets for Copper, Aluminum, Nickel and Zinc. 5248(09/81) $25.00

No. 15: C.W. Smithson, G. Anders, Hae Shin Hwang, L.F. Worley: World Mineral Markets - - Stage III - A User Oriented Simulation Model of the World Markets for Copper, Aluminum, Nickel and Zinc. 5243(09/81) $30.00

No. 16: Mineral Resources Branch, and Centre for Resource Studies Ontario Metal Mining Statistics. 5329(12/82) $15.00

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